X-Ref SA Vol #1

PRELIMINARY ASSESSMENT

FOR THE

(GULTON INDUSTRIES SITE)

ALBUQUERQUE, NEW MEXICO

NMD 986613093

Susan A. Morris

New Mexico Environmental Improvement Division

August, 1990

Preliminary Assessment
of the
Gulton Industries Site
Albuquerque, New Mexico

Date: August 30, 1990

Prepared by: Susan A. Morris

Site Name: Gulton Industries

Site Address: 14800 Central Avenue SE

EPA ID No: (not assigned)

1. INTRODUCTION

a. Location

The site of the former Gulton Industries, Incorporated facility is located at 14800 and 15000 Central Avenue, SE., Albuquerque, New Mexico. The 33.7 acre property is bounded on the north by Central Avenue, on the south by Carnue Land Grant, and on the east and west by arroyos draining into Tijeras Canyon (Figure 1).

The focus of this preliminary assessment investigation is the property located at 14800 Central Ave. SE. The coordinates of this site are: latitude 35 degrees, 3 min. and 48 sec. north, and longitude 106 degrees, 29 min. and 30 sec. west. The site comprises 6.46 acres with in the SE 1/4, Section 26, T.10N, R.4E (Figure 2).

b. Site information

From 1956 to 1979, Gulton Industries, Inc. (Gulton), a manufacturer of military and aerospace instruments, owned and operated a circuit board manufacturing, plating and assembly facility at 14800 and 15000 Central Ave. SE, Albuquerque. In 1978 Gulton sold the property to Mr. George

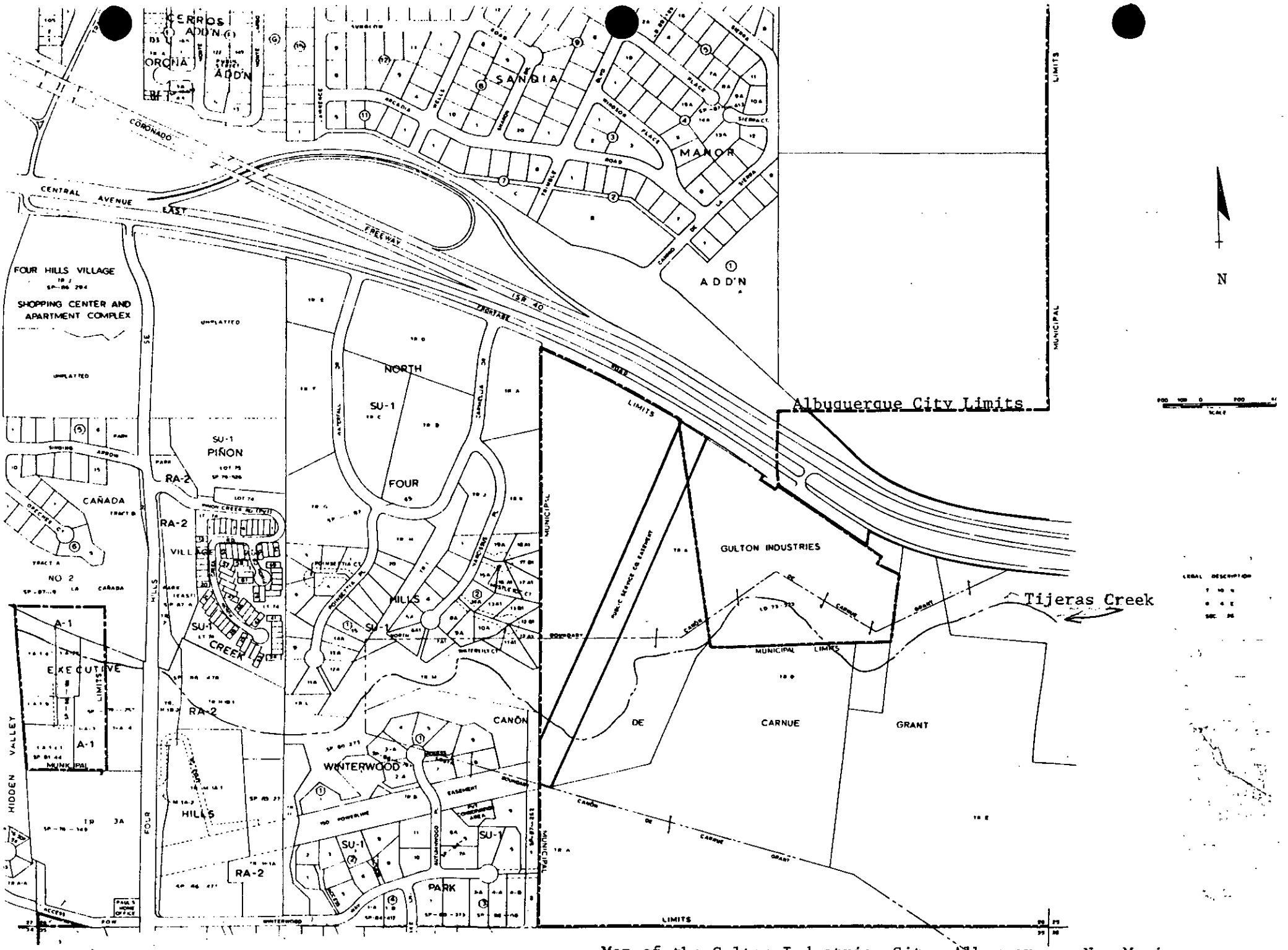

Figure 1. Map of the Gulton Industries Site, Albuquerque, New Mexico

Figure 2. Aerial photograph of western portion of the Gulton Industries site taken in May, 1972.

Chant of George Chant and Associates, 3434 Vassar Drive NE., Albuquerque. In 1979, Gulton moved their operation to a new facility located at 6600 Gulton Ct. NE, Albuquerque, New Mexico.

In 1983, Mr. Chant divided and sold the eastern portions of the property to various individuals (Reference 1). Mr. Chant retains the title to the western portion of the property, 14800 Central Ave. NE, where Gulton operated the Printed Circuit Shop, explosive testing area and the waste treatment ponds (Reference 2). Currently, this property is leased by the Lecroy Research Systems Corporation for their regional sales and service office (Photo. 1).

c. Purpose

This report presents the findings of the Preliminary Assessment conducted at the Gulton Industries site by the New Mexico Environmental Improvement Division (NMEID) under the authority of CERCLA. The purpose of the investigation is to obtain information needed to evaluate the possible threat to public health or the environment through air, groundwater, or surface water and to prepare a trail HRS package for the site. This investigation is part of the ongoing study of the Tijeras Arroyo area by the NMEID, United States Geological Survey (USGS), City of Albuquerque, and Kirkland Air Force Base.

2. SITE HISTORY

a. Site Operations

In 1956, Gulton began operating an electronic development, manufacturing and assembly facility at this site. During 1964 and 1965, Gulton tested explosives on site while under contract with Sandia National Laboratories (Sandia). The work involved detonating explosives and measuring the resulting signal from the ceramic circuits. The explosives and circuitry were placed within a steel explosion chamber that was imbedded in the side of a bank cut (Photograph 2). According to an employee of Gulton, Sandia collected all the fragments generated by the explosions and removed them from the site according to a Gulton employee who worked at the facility during this period (Reference 3).

For the period of time between 1956 and 1970, no records exist concerning the waste disposal operations practiced at this site. In 1969, Gulton's plant manager requested a review of the waste disposal practices and that staff propose alternative methods for waste disposal (Reference 4).

Photograph 1. Panoramic view looking north, from the southern edge of the Gulton Industries, Inc. site. The property is bisected by a dry tributary. On the left ridge is the building that housed Gulton's Printed Circuit Shop (1). It is now occupied by Lecroy Research Systems. On the southern edge of the same ridge are the abandoned explosion chambers (2). On the ridge, to the right of the dry tributary, are Gulton's former office buildings (3). In the foreground is Tijeras Creek (4) that cuts through the southern portion of the property. 6/19/90, Photographer: Susan Morris

Photograph 2. Abandoned explosion chambers. Dale Doremus, of NMEID, is inspecting the graffiti on the exterior of the chambers. Shards of asbestos brick and tiles lay in the debris piles. In the background, on the right, is the building that housed the circuit board plating operations. **6/19/90, Photographer: Susan Morris**

In June, 1970, Gulton applied with the New Mexico Health and Environment Department (NMHED) for approval for a waste treatment system for their circuit board facility (Reference 4). On July 21, 1970, NMHED and the City of Albuquerque approved Gulton's proposed waste disposal and treatment plan (Figure 3). The plan included a flash pan for the evaporation of volatile organic compounds, a hypalon lined pond for retention and concentration of metals from the process fluids, and a lined settling pond for rinse waters which released overflow into a dry tributary approximately 650 feet above the Tijeras Canyon. Periodically, Gulton had the sludge pumped out of the retention pond and taken by Bullion Management, Golden, Colorado (Reference 5).

In 1976, Gulton received a NPDES permit to discharge, at a maximum rate of 200 gal/day, overflow from the rinse water settling ponds into Tijeras Canyon. The permit limits were for pH, cyanide- amenable (0.025ppm) and cyanide total (0.25ppm) (Reference 5) and did not include metals.

In 1979, Gulton moved their operations to new facility in Albuquerque. While the facility was dismantled and equipment removed from the site, the pond liners were left in place (Photograph 3). Currently, the building that housed the Printed Circuits Shop is leased and occupied by Lecroy Research Systems Corporation (Lecory) Lecory is an electronics firm and uses the premises for their regional sales and service office.

b. Existing Analytical Data

NMHED staff inspected the Gulton site and collected water samples from the plating process waste water treatment pond in 1971, 1975 and 1977. In 1971, the results of the laboratory analyses show the effluent to contain high levels (relative to the current NMWQCC groundwater standards) of chromium (0.15 ppm), copper (0.04), cadmium (0.16 ppm), and sulfate (2200 ppm) (Reference 6). In 1975, NMHED field staff again sampled the effluent from the lower pond. Results of the laboratory analysis indicate that chromium and copper concentrations had increased to 2.25 ppm and 2.58 ppm respectively. The cadmium levels were below the detection limits (<0.01ppm) (Reference 6).

In 1977, NMHED staff conducted a NPDES compliance inspection and sampled the effluent from the lower pond for cyanide. The laboratory analysis indicate that the cyanide levels in the pond effluent were 0.0025 ppm and well below the permit limits. The analysis of these samples did not include metals as a parameter (Reference 6).

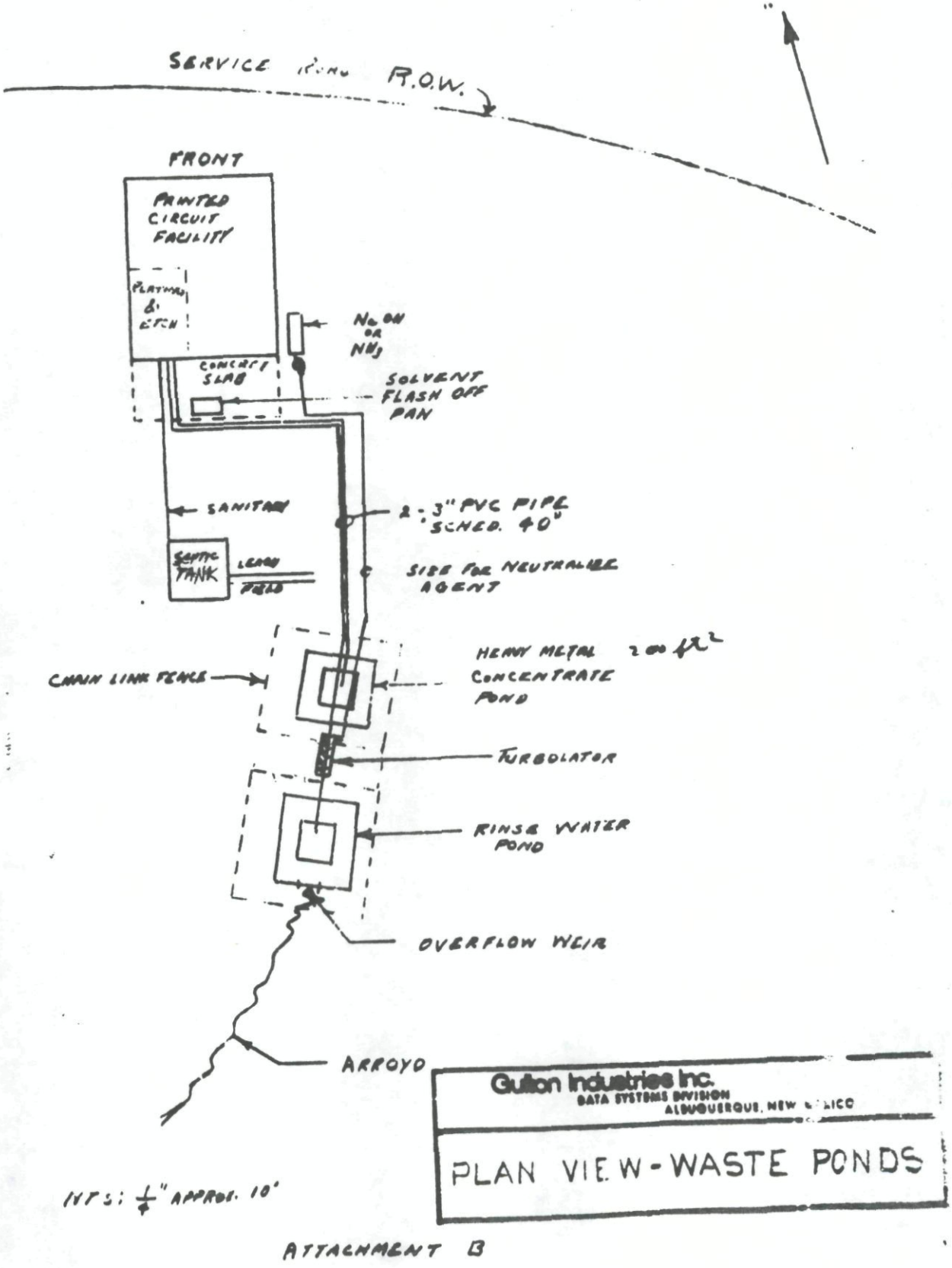

Figure 3. Plan View of the Waste Treatment Facility Submitted to New Mexico Health and Environment Department, 1970.

Photograph 3. Susan Morris, of NMEID, sampling pH of material covering the upper waste water settling pond. The hypalon liners remain in place. In the background is the building that housed the circuit board plating operations. **6/19/90, Photographer: Dale Doremus**

3. SUMMARY OF RECONNAISSANCE VISIT

On July 10, 1990, Susan Morris and Dale Doremus of NMEID met on site with the property owner, Mr. George Chant and walked the perimeter of the property. The site consists of 6.5 acres. Tijeras Creek dissects the southern portion of the property (Figure 1). Tijeras Creek is considered perennial in this segment of the canyon (Photograph 1). The property is bounded to the east and west boarders by dry tributaries that drain into the creek, and on the north by Central Ave. SE (Figure 2).

The site is entered from the north off Central Ave, SE. where the offices of Lecroy Research Systems Corporation are located (Photograph 1). Field testing of soil pH was conducted in areas where stained soils were found and in areas of potential waste discharge. Red, discolored soils were observed on the west side of the building and within a gully that drains from the building into the dry tributary on the west edge of the property. Gravel and cobble fragments, in the same area, are coated with bright green residues (Photographs 4 and 5). The results indicate that the unstained soils have a pH of 8.0 and that the discolored soils have decreasing soil pH with depth (pH 8.0 at the surface and pH 4.5 at 4" below the surface to a depth of 6 inches).

Directly south of the buildings are two septic tanks (Figure 3). The soils in this area are red and there are bright green residues on the cement pads surrounding the opening to the septic tanks (Photograph 6). The pH of the red soils is 4.5 and there is fibrous material mixed into the top sediments (Photograph 7).

East of the septic tanks are the two abandoned waste ponds. The pond liners are still in place and the liner edges are visible (Photograph 3). The most northern pond was used to retain and concentrate metals from the plating solutions. On the southern edge of this pond is a gully where the soils are stained green and red-brown and highly eroded (Photograph 8). At the margin of the eroded area, the red stained surface soil have a pH of 4.5 at the surface and a pH of <4.0 one foot below the surface. The green stained soil have a pH of 6.0. Just below the eroded area is the other pond that was used to contain rinse water (Figure 2). It was from this lower pond that Gulton was permitted to discharge overflow to the dry tributary to the west. Sections of PVC piping are scattered down one of the gullies.

The gullies that drain into the western dry tributary

Photograph 4. Susan Morris, of NMEID, samples soil pH next to the former circuit board plating facility. The reddish stained soils had pHs of 4.5. Stained soils emanated from the corner of the building and continue down slope into a gully. **Photographer: Dale Doremus**

Photograph 5. Red stained, acidic soils afound in a gully that leads from the former circuit board plating facility into a dry tributary of Tijeras Creek. **6/19/90, Photographer: Dale Doremus**

Photograph 6. Dale Doremus, of NMEID, points to bright bluegreen stains on spetic tanks covers. Soils surrounding the tank cover are stained red. **6/19/90, Photographer: Susan Morris**

Photograph 7. Dale Doremus, of NMEID, samples the pH of soils surrounding the septic tanks. In the foreground is a red, fibrous material mixed in with the soil. The pH of the red soil was 4.5. **6/19/90, Photographer: Susan Morris**

Photograph 8. Susan Morris, of NMEID, examines the liner of the upper waste water settling pond. In the foreground is a gully leading from the upper pond to the lower pond. Soils in the gully are stained both red and green. **6/19/90, Photographer: Dale Doremus**

Photograph 9. Debris in dry tributary that leads into Tijeras Creek. Object is thought to be a spent filter. At least three such objects were found in the area. The sampling scoop was used for scale. **6/19/90, Photographer: Susan Morris Photographer: Susan Morris**

contain circuit board shards and electronic debris. The dry tributaries which drain into Tijeras Creek contain miscellaneous debris including garbage and automobiles. What appears to be spent filters were also found in the dry tributary (Photograph 9).

On the southern edge of the ridge above Tijeras Creek, is the area where Gulton tested explosives (Figure 2). Three explosion chambers are imbedded into the south face of a bank cut (Photographs 2). The largest chamber is 4.8 feet deep with a diameter of 2.8 feet and has two vent pipes rising from the top. The two smaller chambers are 1.8 feet in diameter and 2.7 in depth. The chambers had no observable perforations. Surrounding the chambers are debris piles that appear to contain shards of asbestos bricks and tiles.

The property is not fenced. Mr. Chant removed one building on the property that vagrants were occupying. Along Tijeras Creek there is abundant evidence, (trails, tracks and debris), that the this area is used by the public for recreation and temporary shelter for transients.

4. WASTE CONTAINMENT AND HAZARDOUS SUBSTANCE IDENTIFICATION

No records are presently available which describe the waste management practices that Gulton employed from 1956 to 1970. During the mid-1960's, nitroaromatic compounds may have been released into the environment in the area of the explosive testing site. The solvents used in the plating process after 1970 were disposed of in an evaporation "flash" pan onsite (Figure 3). There are no available records of the volume of solvents used or disposed of onsite.

Acidic (pH <6.5), discolored soils and bright blue green coatings on gravels and cobbles, indicates that acidic wastes, containing in part copper sulfate, were discharged onsite. From 1970 to 1979 the wastes from the plating vats and process rinse waters were discharged to a lined treatment ponds (Reference 4).

Records indicate that effluent from the rinse water pond was discharged to dry tributaries of Tijeras Creek between 1970 and 1979. In 1975, analytical results of water samples collected at the facility, show the effluent from the rinse water pond contained chromium and copper concentrations of 2.25 ppm and 2.58 ppm, respectively. Effluent samples taken earlier in 1971, indicate that sulfate concentrations in the effluent were as high as 2200 ppm. From 1976 to 1979, Gulton the had a NPDES permit that allowed a maximum discharge of 200 gallons/day from the rinse water pond to a

tributary of Tijeras Creek (Reference 5).

The total area of acidic, stained soils is estimated to be 775 ft^3. This estimate includes the area of the settling ponds, the gullies draining into the western tributary and the area surrounding the septic tank covers. The depth of contamination is assumed to be less than 8 inches based on the results of the soil pH survey conducted during the site reconnaissance visit (Reference 7).

Assuming that the acidic, stained soils contain CERCLA hazardous substances, the estimated waste quantity is calculated to be 650 tons (based on the average arable surface soil having a particle density of 2.63 Mg/m^3 (Reference 8). Presently, the acidic soils on the property are not contained. The fill material in the abandoned waste water settling ponds are partially contained.

The one time waste volume of the two settling ponds is estimated to be 3.7 cubic yards. Soils in the area ofthe explosion chambers chambers may be contaminated. This area is estimated to be 200 ft^2.

5. PATHWAY CHARACTERISTICS

a. Air Pathway Characteristics

The air route is not a significant contaminant pathway for the migration of hazardous substances at this site. It is not likely that the possible contaminants at this site would produce a gaseous emission. It is possible that contaminants have adsorbed to the fine earth fraction and may become airborne in strong winds; however, the site is characterized by undulating topography, significant ground cover, and gravelly surface soils that provide wind breaks and lessen the possibility that particles would move great distances.

b. Ground Water Characteristics

The site is located on the western fringe of the Sandia Mountains in the lower Tijeras Canyon area. In this area the canyon cuts the Precambrian igneous and metamorphic rocks and the Quaternary alluvial deposits. Approximately 0.5 miles west of the site is the mountain-basin margin.

Both the Quaternary alluvium and the Precambrian rocks serve as aquifers and are considered to be hydraulically connected. The alluvial deposits of coarse sands and gravels are the major water baring formation. These deposits, which in some areas exceed depths of 100 feet, line the floor and side slopes of the canyon. The

productivity of the Precambrian rocks is dependent on localized permeable zones that were created by faulting, fracturing and jointing of bedrock.

Hydraulic conductivities (K) of 3.2 ft/day and 33.2 ft/day were estimated from transmissivity values obtained from aquifer performance tests conducted on two wells in the area of Tijeras Canyon, approximately 3 miles northeast of the Gulton site (Reference 9). The wide range of estimated K values is consistent with Freeze and Cherry's estimated ranges of hydraulic conductivity for fractured metamorphic rocks and alluvial deposits (Reference 10).

Groundwater movement at the site southwest towards Tijeras Creek and then west along the axis of the canyon (Figure 4). Hydrogeologic maps indicate that the hydraulic gradient of the ground water is 500'/ 5000' = 0.1 (Reference 11).

Many of the wells in the area have been installed along the canyon floor are generally 25 to 150 feet deep. Approximately 0.5 miles west of the site, where Tijeras Canyon opens up and becomes the Tijeras Arroyo, there is monitoring well that is screened in the alluvium. The depth to water in this well varies seasonally, between 52 and 60 feet. (Reference 12). The maximum yield from wells in the area was reported to be greater than 50 gallons per minute. The average total dissolved solid concentration is 462 milligrams per liter (Reference 11).

The Gulton site is situated on a dissected alluvial fan. Across the site the estimated depth to water varies from a few feet near Tijeras Creek to greater than 50 feet near Central Ave.

Periodic fluctuations in the water levels in wells in the area are due to seasonal variation in precipitation and withdrawals from wells. Recharge to the aquifer is primarily by direct infiltration of precipitation or snow melt. The annual precipitation for the area is 14.6 inches, with half of it occurring as rain during the period July to October (Reference 13). Yet, in the Albuquerque area, it is during the months November through February that a seasonal net precipitation of 0.79 inches is calculated (Reference 14). The winter moisture surplus is illustrated in black on graph #54 in Reference 14.

c. Surface Water Characteristics

Tijeras Creek dissects the southern portion of the property (Figure 1). Residents in the area report that the creek is perennial. The creek is lined by large cottonwood trees and perennial shrubs (Photograph 10) Flow in Tijeras Creek

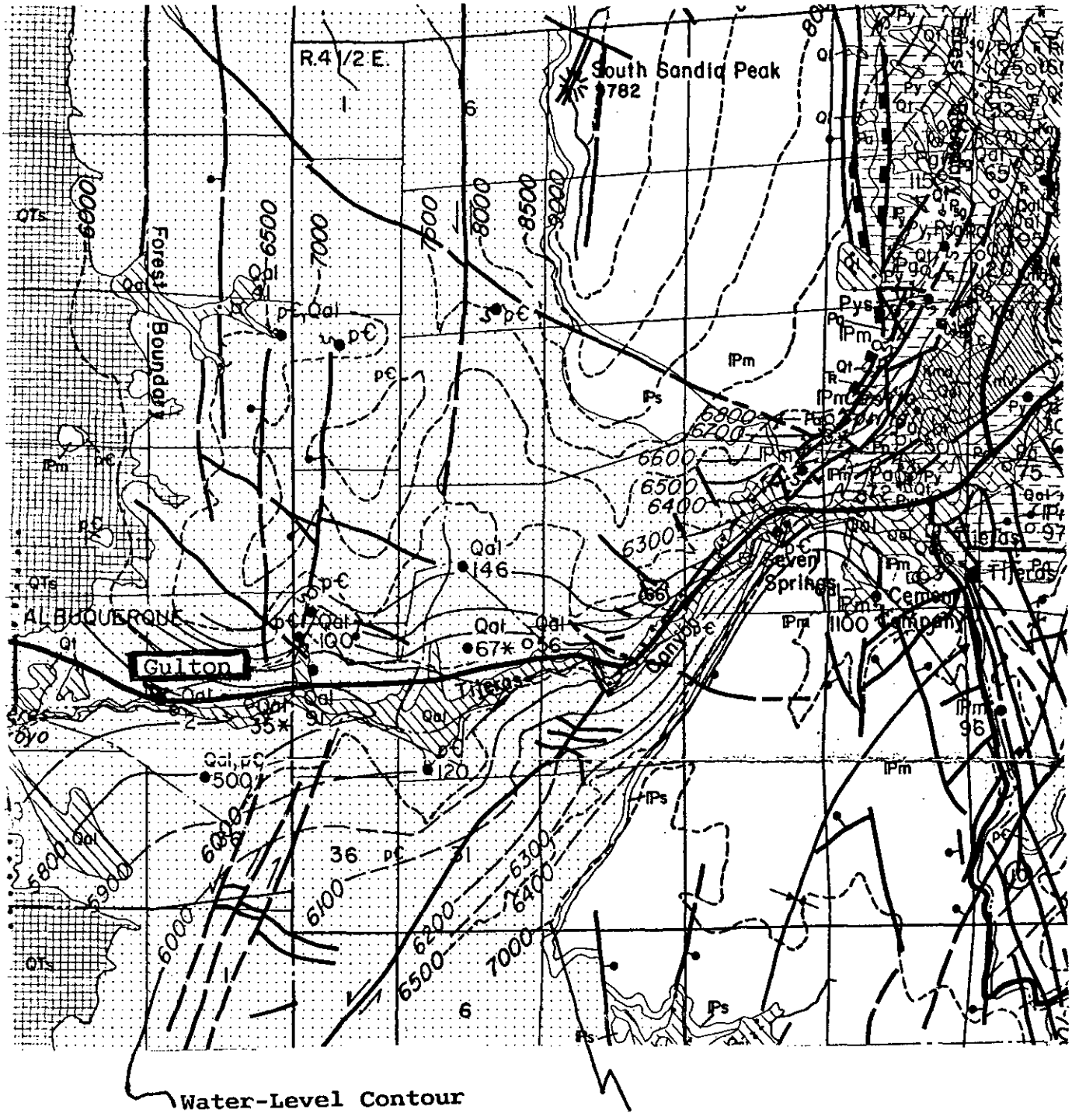

Figure 4. Water Level Contours in the Tijeras Canyon Area. (Reference 9)

Photograph 10. Dale Doremus of NMEID, stands on the bank of the perennial creek in Tijeras Canyon. The dark sediment, in the left of the photograph, is the mouth of the dry tributary that boarders the western boundary of the Gulton site. **6/19/90, Photographer: Susan Morris**

fluctuates greatly. On July 7, 1988, the annual maximum discharge, recorded west of the Gulton site, was 1,830 ft^3/sec and on July 27, 1989 the peak flow was too low to register on the gage (Reference 15a and 15b). Approximately 0.5 miles downstream the surface flow is lost to the basin-fill deposits of the Santa Fe Formation as the canyon opens into a wide arroyo (Reference 11).

Surrounding the site are dry tributaries and gullies that drain into Tijeras Creek. The distance to Tijeras Creek from possible points of discharge range from 180 feet to 1,050 feet. From 1970 to 1979, Gulton discharged overflow from the rinse water settling pond into the dry tributary approximately 650 feet upgradient of Tijeras Creek (Reference 5).

Surface runoff would flow into the gullies and tributaries and then south to Tijeras Creek. The tributaries contains vegetation, consisting of brush oak and grasses, and granitic stones and boulders. Soils adjacent to the tributaries have a moderate erosion hazard rating with a high permeability of 6 to 20 inches/hour (Reference 13).

d. Onsite Pathway Characteristics

There are no barriers to accessing the site. There is evidence, in the form of tracks, trails and debris, that the canyon is used for recreational activities such as horseback riding, motorbike trail riding, public gathering and hiking. People have frequented the site as evidenced by the graffiti on the abandoned explosion chambers situated above the canyon and trash, automobiles, and shotgun shells litter the dry tributaries on the western edge of the site. Lecroy Research Systems Corporation operate their regional sales and service office in the renovated Printed Circuits Shop of the Gulton facility.

6. TARGETS

a. Surface Water Targets

Tijeras Creek flows across the southern portion of the property (Figure 1). This perennial stream serves to recharge the Santa Fe Aquifer as it flows into the Albuquerque Basin. This stream is not used for drinking water, irrigation or fisheries. The Rio Grande is approximately 23 miles downstream of the site. However, the first water intake from the Rio Grande, for irrigation or drinking water, is at the Isleta Pueblo 26 miles from the site.

b. Ground Water Targets

Ground water is the only source of drinking water in the Albuquerque and Lower Tijeras Canyon areas. Ground water use in the area includes domestic, municipal, industrial,and agricultural uses.

There are 14 City of Albuquerque municipal water supply wells and 3 water supply wells for Kirkland Air Force Base within a 4 mile radius of the site (Figure 6). The Lomas and Love Wells are part of the Freeway Trunk system which serves 135,610 persons. The Ridgecrest Wells are part of the Ridgecrest Trunk system that serves approximately 59,586 persons (Reference 16). The wells on the Kirkland Air Force Base serve an estimated 22,000 individuals (Reference 17).

Privately owned wells within the 4 mile radius are located to the east of the site and are used for domestic, agricultural, and possibly industrial uses. These wells serve approximately 735 persons outside of the City of Albuquerque water distribution system.

Ground water is used by an estimated population of 157,972 within a three mile radius from the site. An estimated 353,168 individuals use ground water within a four mile radius of the site (Reference 18).

Distance (miles)	Population
>0 - 1/2	8
>1/2 - 1	27
>1 - 2	327
>2 - 3	157,610
>3 - 4	195,196
Total population	353,168

c. Air Route Targets

The air route is not considered a significant pathway for migration of hazardous substances from the site.

d. Onsite Targets

Lecroy employs approximately 11 persons. No one lives on the site and the nearest residential structure is 0.6 miles east of the site.

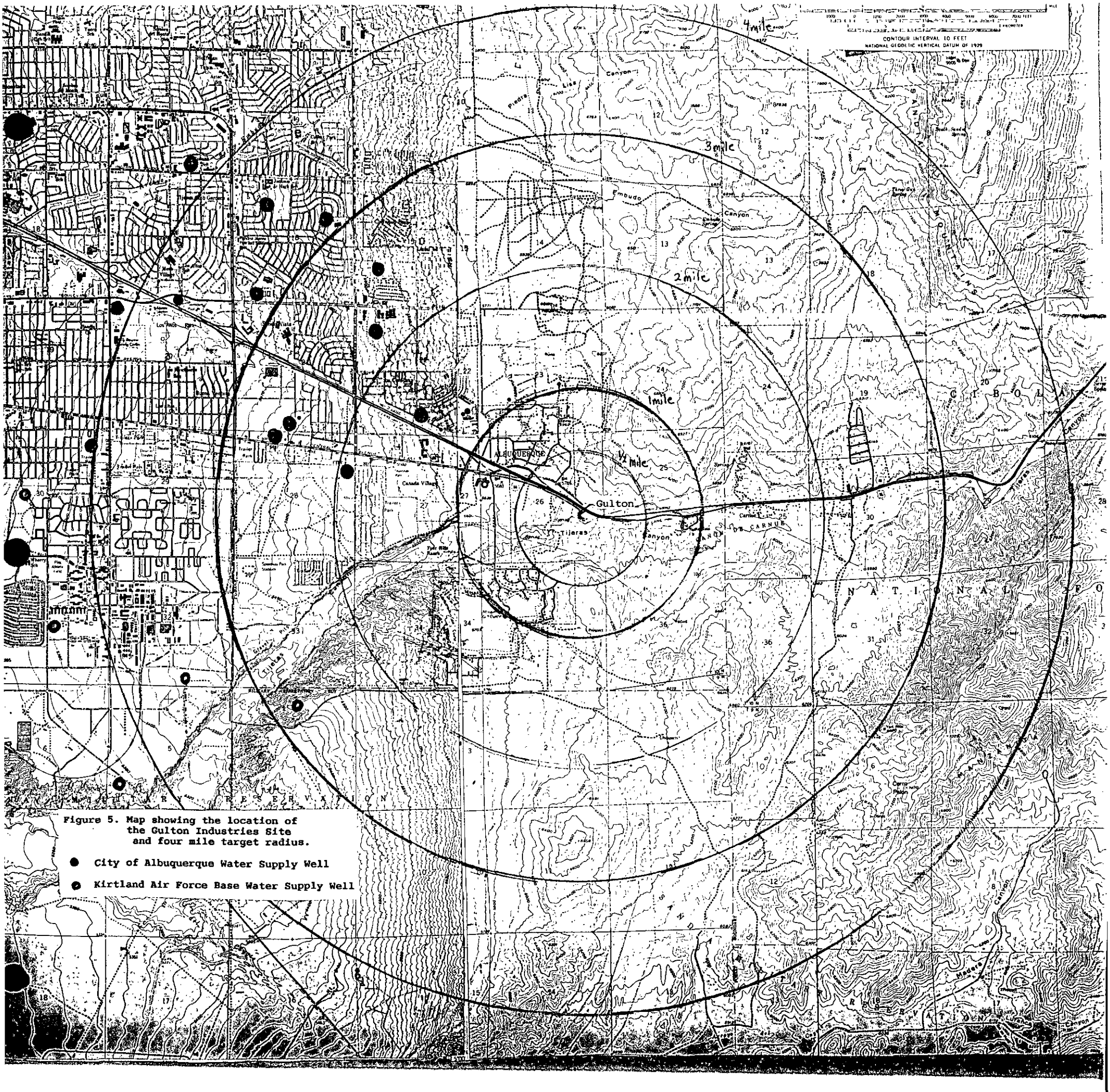

Figure 5. Map showing the location of the Gulton Industries Site and four mile target radius.

● City of Albuquerque Water Supply Well

◉ Kirtland Air Force Base Water Supply Well

6. OTHER REGULATORY INVOLVEMENT

a. Permits

From 1977 through 1979 Gulton had a NPDES permit for discharge of process rinse waters into a dry tributary that drains into the Tijeras Creek (Reference 5).

b. State, Federal and Local Agencies

Currently, only the NMEID Superfund Program is investigating the former Gulton site. The investigation is part of the ongoing study of the Tijeras Arroyo area by the NMEID, United States Geological Survey (USGS), City of Albuquerque, and Kirkland Air Force Base.

7. CONCLUSIONS AND RECOMMENDATIONS

There are no documented releases to ground water or to the air at the Gulton site. However, from 1970 to 1979, plating process rinse waters containing metals were discharged into a dry tributary of Tijeras Creek. Additionally, the acidic, stained soils onsite indicate that discharges of plating process fluids occurred in the past. The potential hazardous substances present at the site include metals, solvents and nitroaromatics compounds. Ground water and surface water are the most likely pathways for migration of contaminants at the site.

NMEID recommends that a Screening Site Inspection (SSI) be conducted at the former Gulton Site to determine: 1) the types and volumes of wastes at the site; and 2) the presence and extent of any soil, surface water or ground water contamination by heavy metals, solvents and/or nitroaromatic compounds.

REFERENCES

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3) Personal Communication, June 14, 1990, Walter Whaley, Gulton Industries, Inc., and Susan Morris: discuccion regarding the history of waste management and property ownership of the former Gulton Industries, Inc. site, Albuquerque, New Mexico.

4) NMEID, 1969 - 1971, Waste Water Treatment Plan for Gulton Industries, Inc., Albuquerque, New Mexico.

5) NMEID, 1975 - 1979, NPDES Permit for Gulton Industries, Inc., Albuquerque, New Mexico.

6) NMEID, 1971 - 1977, Results of Laboratory Analyses of Water Samples taken at the former Gulton Industries, Inc. site, Albuquerque, New Mexico.

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15b) Beal, L.V. and Borland, J.P., 1989, Water Resource Data, New Mexico Water Year, U.S.G.S, pp. 344, 351.

16) City of Albuquerque, Public Works Dept., Jan. 1, 1990, Water System Pumping Facility Data.

17) Personal Communication, July 25, 1990, Lt. Donald Hickman, Kirtland Air Force Base, and Susan Morris: discuccion regarding the population served by the water supply wells on Kirtland Air Force Base, New Mexico.

18) City of Albuquerque Planning Division, May 1988, Albuquerque Data Book 1988 Edition.

PA QUESTIONNAIRE

Name: Susan Morris **Location:** 14800 Central Avenue SE
Site Name: Gulton Industries **Date:** 7/30/90

MAJOR CONSIDERATIONS

A) **DOES ANY QUALITATIVE OR QUANTITATIVE INFORMATION EXIST THAT MAY INDICATE AN OBSERVED RELEASE TO AIR, GROUND WATER, SOIL OR SURFACE WATER?** Yes

Describe: Soils on-site are stained and have a pH of less than 5.0 while background soils have a pH of 8.0.

B) **IF THE ANSWER TO #1 IS YES, IS THERE EVIDENCE OF DRINKING WATER SUPPLY CONTAMINATION OR ANY OTHER TARGET CONTAMINATION (i.e., foodchain, recreation areas, or sensitive environments)?** No

Describe: surface and groundwater routes have not been sampled

C) **ARE THERE SENSITIVE ENVIRONMENTS WITHIN A 4-MILE RADIUS OR 15 DOWNSTREAM MILES OF THE SITE?** Yes
IF YES, DESCRIBE IF ANY OF THE FOLLOWING APPLY:

-Multiple sensitive environments?

-Federally designated sensitive environment(s)? The Sandia Wilderness Area is located 3/4 mile north of the site

-Sensitive environment(s) downstream on a small of slow flowing surface water body? (see above)

D) **IS THE SITE LOCATED IN AN AREA OF KARST TERRAIN?** No

Describe:

E) **IS THE AQUIFER UNDERLYING THE SITE A "SOLE SOURCE" AQUIFER AS DESIGNATED ACCORDING TO SECTION 1424(e) OF THE SAFE DRINKING WATER ACT?** The aquifer has not been designated sole source

F) **DOES ANY QUALITATIVE OR QUANTITATIVE INFORMATION EXIST THAT PEOPLE LIVE OR ATTEND SCHOOL ON ONSITE CONTAMINATED PROPERTY?** No

Describe: People do not live or attend school onsite; however, people do work in the office building onsite.

SITE INFORMATION

SITE NAME: Gulton Industries (former site)
ADDRESS: 14800 Central Avenue SE
CITY: Albuquerque **COUNTY:** Bernalillo
STATE: NM **ZIP:**
EPA ID: (not assigned)

LATITUDE: 35°, 3', 45" **LONGITUDE:** 106° 29', 30"

2. **DIRECTIONS TO SITE (from nearest public road):** Take Carnue exit off of Hwy 40 heading East. Go west on old Hwy 66 for 1.2 miles. Site is on the south side of the road at 14800 Central Avenue SE.

3. **SITE OWNERSHIP HISTORY (use additional sheets, if necessary):**

A) **Name of current owner:** George Chant

Address: 3434 Vassar Drive, NE

City: Albuquerque **County:** Bernalillo
State: NM **Zip:** 87106
Dates: **From** 1978 **To** present **Phone:** (505) 883-8906

B) **Name of previous owner:** Gulton Industries, Inc. Data Systems

Address: 6600 Gulton Ct. NE

City: Albuquerque **County:** Bernalillo **State:** NM

Zip: 87190

Dates: **From:** 1956 **To:** 1979 **Phone:** (505) 345-9031

Source of ownership data: George Chant and Walt Whaley, president, Gulton Industries

Source of ownership data:

4. **TYPE OF OWNERSHIP (check all that apply):**

__X__ Private _____ State _____ Municipal

_____ Federal _____ County _____Other (describe): _____

5. **NANE OF SITE OPERATOR:** Gulton Industries, Inc. Data System

Address: 6600 Gulton Ct. NE

City: Albuquerque **County:** Bernalillo

State: NM **Zip:** 87190 **Phone:** (505) 345-9031

BACKGROUND/OPERATING HISTORY

6. **DESCRIBE OPERATING HISTORY OF SITE:** From 1956 to 1979, Gulton Industries, Inc., a manufacturer of military and acrospace instruments, owned and operated a circuit board manufacturing, plating and assembly facility. During the mid-1960's, Gulton tested explosives on site.

Source of information: Mr. Walt Whaley and EID, Surface Water NPDES permit files.

7. **DESCRIBE SITE AND NATURE OF SITE OPERATIONS (property size, manufacturing, waste disposal, storage, etc.):** The site is, 6.46 acres in size. No records are presently available which describe the waste management practices that Gulton employed from 1956 to 1970. During the mid-1960's nitroaromatic compounds may have been released into the environment in the area of the explosive testing site. In 1970, Gulton sought state approval of a waste treatment facilty for process waters from its plating operations. (see PA narrative report, Figure 2).

Source of Information: NMEID file and PA inspection

8. **DESCRIBE ANY EMERGENCY OR REMEDIAL ACTIONS THAT HAVE OCCURRED AT THE SITE:** None

Source of information: NMEID files

9. **ARE THERE ANY RECORDS OR KNOWLEDGE OF ACCIDENTS OR SPILLS INVOLVING SITE WASTES?** None

Source of information: NMEID files

10. **DISCUSS ANY SAMPLING DATA AND BRIEFLY SUMMARIZE DATA QUALITY (e.g., sample objective, age/comparability, analytic methods, detection limits and QA/QC:** The 1971, NMEID staff collected water samples of the effluent from waste water ponds. The results of the laboratory analyses show the effluent to have concentrations of chromium at 0.15 ppm, of cadmium at 0.16 ppm and of sulfate at 2200 ppm. The minimum detection limits were <0.01 ppm. In 1975, EID field staff again sampled the effluent from the pond and found that chromium and copper concentrations had increased (2.25 ppm and 2.58 ppm respectively) the cadmium levels were below the detection limits (<0.01 ppm). The laboratory analysis did not include sulfate or pH. In 1977, to monitor compliance with the NPDES permit, EID staff sampled the pond effluent for only cyanide. the reported concentrations were 0.0025 ppm, but no detection limits were given.

Source of information: NMEID, Surface Water Bureau files,

WASTE CONTAINMENT/HAZARDOUS SUBSTANCE IDENTIFICATION

11. **FOR EACH SOURCE AT SITE, SUMMARIZE ON TABLE 1 (page 12): 1) Methods of hazardous substance disposal, sotrage or handling; 2) size/volume/area of all features/structures that might contain hazardous waste/ 3) condition/integrity of each storage disposal feature or structure; and 4) types of hazardous substances handled. (see attached)**

12. **BRIEFLY EXPLAIN HOW WASTE QUANTITY WAS ESTIMATED (e.g., historical records or manifests, permit applications, air photo measurements, etc.):** Waste Quanity estimation was based on observations made during PA inspection. The area of acidic, stained soils was calculated from air photographs measurements multiplied by a depth of 1 foot. The area of each of the ponds was reported to be 200 ft^2

Source of information: NMEID files, Air photos

13. **DESCRIBE ANY RESTRICTIONS OR BARRIERS ON ACCESSIBILITY TO ONSITE WASTE MATERIALS:** none, site is not fenced

Source of information: PA investigation

GROUND WATER CHARACTERISTICS

14. **ANY POSITIVE OR CIRCUMSTANTIAL EVIDENCE OF A RELEASE TO GROUND WATER?** Yes

Describe: The groundwater pathway has not been sampled, however, evidence of discharges to dry tributaries indicates a potential release of contaminants to groundwater

Source of information: NMEID files

15. **ON TABLE 2 (page 13), GIVE NAMES, DESCRIPTIONS, AND CHARACTERISTICS OF GEOLOGIC/HYDROGEOLOGIC UNITS UNDERLYING THE SITE. (see attached)**

16. **NET PRECIPITATION:** 0.76 inches

SURFACE WATER CHARACTERISTICS

17. **ARE THERE SURFACE WATER BODIES WITHIN 2 MILES OF THE SITE?** Yes

_____ Ditches _____Lakes_____Pond

__X__ Creeks _____ Rivers _____Other __X_____Tijeras Arroyo

18. **DISCUSS THE PROBABLE SURFACE RUNOFF PATTERNS FROM THE SITE TO SURFACE WATERS:** Surface runoff from the site would flow into the dry tributaries that drain into Tijeras Creek.

19. **PROVIDE A SIMPLIFIED SKETCH OF SURFACE RUNOFF AND SURFACE WATER FLOW SYSTEM FOR 15 DOWNSTREAM MILES (see item #36).**

20. **ANY POSITIVE OR CIRCUMSTANTIAL EVIDENCE OF SURFACE WATER CONTAMINATION?** Yes

Describe: Surface water pathway has not been sampled. However wastewater and process water are known to have been discharged to a tributary of Tijeras Creek.

Source of information: NMEID files

21. **ESTIMATE THE SIZE OF THE UPGRADIENT DRAINAGE AREA FROM THE SITE:** Approx. 160 acres

22. **DETERMINE THE AVERAGE ANNUAL STREAM FLOW OF DOWNSTREAM SURFACE WATERS**

Water body: Tijeras Creek **Flow:** 1,830 cfs (Annual max-1988)

Water body: **Flow:**

Water body: **Flow:**

Source of Information: USGS, NM Water Resource Data 1974 to 1987 avg. discharge.

23. **IS THE SITE OR PORTIONS THEREOF LOCATED IN SURFACE WATER?** No

24. **IS THE SITE LOCATED IN A FLOODPLAIN (indicated flood frequency)?** No. The southern margin of Gulton Industries property is within the flood plain of Tijeras Creek

25. **IDENTIFY AND LOCATE (see item #36) ANY SURFACE WATER RECREATION AREA WITHIN 15 DOWNSTREAM MILES OF THE SITE:** Yes Tijeras Creek crosses the southern portion of the Gulton site and is used for recreation-picnics, hiking, trails and party sites.

Source of Information: PA investigation

26. **TWO YEAR 24-YEAR RAINFALL:** 1.6 inches

TARGETS

27. **DISCUSS GROUND WATER USAGE WITHIN FOUR MILES OF THE SITE:** The groundwater use in the area primarily municipal, domestic and industrial. There are 14 public water supply wells within a 4 mile radius of the site for the city of Albuquerque and 3 water supply wells on Kirtland Air Force Base.

Source of Information: NMEID Water Supply Program, City of Albuquerque, Public Works Dept.; Base Engineer Office, KAFB.

28. **SUMMARIZE THE POPULATION SERVED BY GROUND WATER ON THE TABLE BELOW:**

Distance (miles)	Population
>0 - 1/4	0
>1/4 - 1/2	8
>1/2 - 1	27
>1 - 2	327
>2 - 3	157,610
>3 - 4	195,196

Source of Information: City of Albuquerque Public Works Dept. Base Engineer Office, Kirtland Air Force Base aerial photographs

29. **IDENTIFY AND LOCATE (SEE ITEM #36) POPULATION SERVED BY SURFACE WATER INTAKES WITHIN 15 MILES OF THE SITE:** None

Source of information: NMEID files

30. **DESCRIBE AND LOCATE FISHERIES WITHIN 15 DOWNSTREAM MILES OF THE SITE (i.e., provide standing crop or reproduction and acreage, etc.):** None exist

Source of information: NMEID files

31. **IF SURFACE WATER RECREATION AREAS EXIST, CHOOSE RECREATIONAL USE CATEGORY, AND THEN DETERMINE THE POPULATION WITHIN THE ASSIGNED RADIUS FROM THE RECREATION AREA. (use GEMS to allocate into distance rings.)** NA

a. **Capital use and access improvements (assigned radius = 125 miles)**

b. **Access improvements only _____ (assigned radius = 80 miles)**

c. **Observed use only_____(assigned radius = 40 miles)**

d. **None of the above apply and access is ont restricted (assigned radius = 10 miles)**

	Distance (miles)	Population

32. **DETERMINE THE DISTANCE FROM THE SITE TO THE NEAREST OF EACH OF THE FOLLOWING LAND USES.**

Description	Distance (miles)
Commercial/Industrial/	on site
Institutional	not known
Single Family Residential	0.6
Multi-Family Residential	not known
Park	0.75

Agriculture	0.8

Source of Information: NM Highway and Transportation Dept. Air photographs

33. **SUMMARIZE THE POPULATION WITHIN A FOUR-MILE RADIUS OF THE SITE:**

Distance (miles)	**Population**
onsite	none
>0 - 1/4	8
>1/4 - 1/2	15
>1/2 -1	550
>1 - 2	15,940
>2 - 3	18,000
>3 - 4	17,300

Source of Information: City of Albuquerque Planning Division

OTHER REGULATORY INVOLVEMENT

34. **DISCUSS ANY PERMITS/VIOLATIONS:**

County:

State:

Federal: NPDES permit for discharge of rinse water into an arroyo. Site inspected by NM EID to monitor compliance with permit on 3/30/77

Other:

Source of Information: NMEID, Surface Water Bureau files

35. **SKETCH OF SITE**

Include all pertinent features, e.g., wells, sotrage areas, underground storage tanks, waste areas, buildings, access roads, areas of ponded water, etc. Attach additional sheets with sketches of enlarged area, if necessary.
(see attached sheet)

Figure 1. Aerial photograph of the western portion of the Gulton Industries, Inc. site taken in May, 1972.

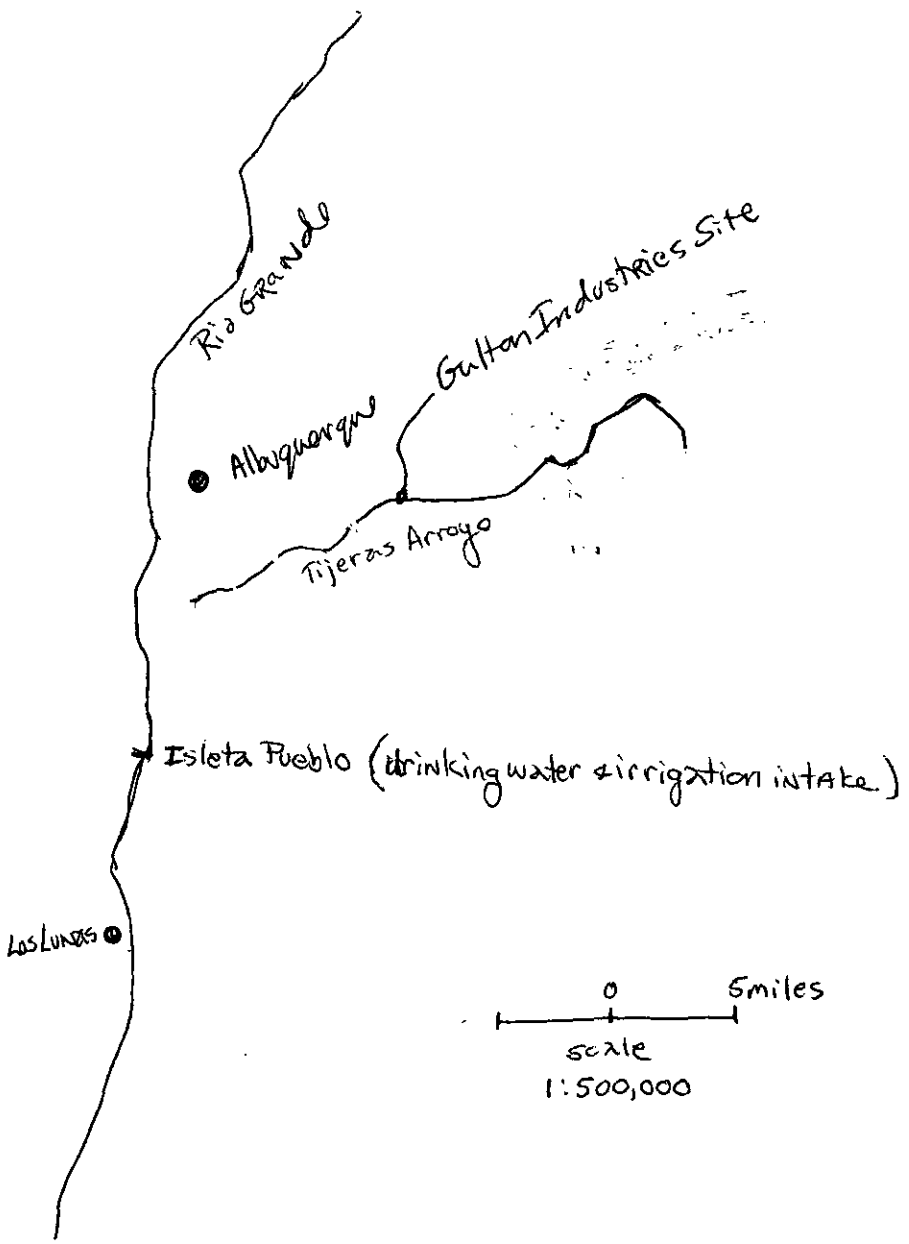
—··— dry tributaries

§ septic tanks

1 inch = 100 feet

36. **SURFACE WATER FEATURES**

provide a simplified sketch of surface runoff and surface water flow system for 15 downstream miles. Include all pertinent featrues, e. g., intakes, recreational areas, fisheries, gauging stations, etc.



REFERENCE 1

STATE OF NEW MEXICO
ENVIRONMENT

RECORD OF TELEPHONE CONVERSATION

Time:	Date: JUNE 5, 1990
Originating Party: SUSAN Morris EID/Superfund	Other Parties: David M'Cormick American Society of Radiologic Tech.

Subject: Ownership of property 15000 central SE

Discussion: Mr. McCormick is manager of the ASRT office. They are an administrative organization. They lease space to CHROMEX, which is also an administrative group that does electronic work. ASRT BOUGHT the property from George Chant in 1989 No problem with access — just give him a call 298-4500

Susan A Morris
Signed

REFERENCE 2

STATE OF NEW MEXICO
ENVIRONMENT

RECORD OF TELEPHONE CONVERSATION

~~Time~~ DATE: 7/5/90	~~Date~~ Time: 9:30 am
Originating Party: Susan Morris	Other Parties: George Chant
Superfund / EID	George Chant & Associates

Subject: Property ownership of former Gulton Industries site ~ 15000 Central NE.

Discussion: Mr. Chant indicated that he bought the Gulton site as part of the contract to construct the New Gulton facilities on Gulton Ct. in Albuquerque. Mr. Chant said:

1) That he devided the former Gulton Property and sold off the ~~Western~~ section (15000, 15100 Central) to other parties (American Radiological Society & J&M Systems).

2) He still owns the facility on 14800 Central, where Gulton had their Printed Circuits Shop.

3) He now leases the building to Lecroy Corp. which has their regional sales & service office there.

4) He will give acesses to the property but would like to meet us on the property.

5) He obtained the Gulton property in 1975.

Susan A Morris

Signed

REFERENCE 3

STATE OF NEW MEXICO
HEALTH ENVIRONMENT

RECORD OF TELEPHONE CONVERSATION

Time: 9:30 AM	Date: 7/3/90
Originating Party: Mr. Whaley	Other Parties: Susan Morris
President / Gulton Industries	EID / Superfund

Subject: Gulton Industries

Discussion: Mr. Whaley returned my call and told me the following.

1) The property was sold to Mr. George Chant - A contractor who constructed the present Gulton facility - His take over of the property was part of the construction contract. -

2) Explosive work was done under contract with Sandia. South of the Waste Treatment Ponds was a small fenced area where a small building housed the Explosive site. The explosives were set off in a "boom chamber" - The size of a 55 gallon drum ~~[illegible]~~. The circuit - ceramics (PZO) - explosives were the size of small cigarette pack. The remenients of the exploded devise were placed in a plastic bag and removed by Sandia Labs for analysis. This work went on in the mid-1960's and a total of ~100 explosives were detonated. Work was limited to this particular Sandia Contract. Explosives where 1oz charges

3) He said that he worked in another section by was aware of the general work done at site. He could hear the explosives very faintly from main bldg.

4) Gulton operated the facility from 1956 to 1979. He worked at this site from 1958 to 1971 and returned in 1977. He moved when the facility was relocated.

5. In the main buildings was where they designed and assembled electronics

Mr. Whaley said that he would try to get hold of some old timers who might have a better idea of when the explosive projects occured

Mr. Whaley: 345-9031

Signed

REFERENCE 4

GULTON INDUSTRIES, INC.

OFFICE MEMORANDUM

To Division and Subsidiary Managers

Date April 16, 1970

From Walter F. Gips, Jr.

Ref.

Subject: POLLUTION

I know that all of you are concerned with pollution, both in general and also with particular reference to Gulton. I would, therefore, like to have a report from each of you as to the situation in your Division or Subsidiary with regards to both air and water pollution.

In this report I would like to know whether or not we have been or are polluting the air or water. If we were, what corrective actions have been taken and what were the costs? If we still are polluting, what are we planning to do to correct this and what are the costs that will be involved?

Please have your answers in the mail to me by Friday, May 1st.

Walter F. Gips, Jr.

WFG/mcj

cc: Group Vice Presidents

NEW MEXICO HEALTH & SOCIAL SERVICES DEPT. D.P.W. 800

INTER-OFFICE MEMORANDUM

To: To the File **Date:** 4-30-70

From: John R. Wright

Subject: Health and Social Services Department, Water & Liquid Waste Section, and Albuquerque Environmental Health Department's Administrative agreement for Approval of Liquid Waste Disposal Facilities in Bernalillo County

On April 30, a meeting was held in John Wright's office to discuss the above referenced consideration. Those present were:

Mr. Richard Bruguelas & Mr. Bill Goodman
of the Albuquerque Environmental Health Dept.

Messrs. Wright, Feld, Willard & Burkhart
of the Water & Liquid Waste Section.

It was generally agreed that no high density or high water use, commercial or industrial waste water disposal facilities, would be approved without on-site investigation and concurrence of both offices.

It was generally agreed that the population density of Bernalillo County is to the point that septic tank disposal for commercial and industrial establishments is no longer an acceptable method of waste water treatment and disposal in a large portion of the county.

In the event that surface disposal is necessary, waste water shall be treated by aerobic process, sedimentation, sand filtration and chlorination prior to discharge. Commercial and industrial establishments shall be permitted to remain in operation only providing the waste water treatment meets the above stipulated requirements.

JRW:mlg

GULTON INDUSTRIES, INC.

OFFICE MEMORANDUM

To Walter F. Gips, Jr. Date 5/11/70

From E. M. Roby Ref.

Subject: Capital Expenditure Request

We have now completed our study of the facilities and equipment necessary to properly treat the printed circuit shop effluent. Listed below are the four types of wastes requiring treatment together with the means proposed for accomplishing this treatment.

1. Sanitary - Sanitary waste will be separated from all other wastes and disposed of through normal means in a septic tank. Since chemicals have contaminated our tank and our leaching field needs repair, a total of $1,275 is required to make this system fully operational.
2. Hydrocarbons - These wastes will be drawn off into a flash pan and disposed of through evaporation at a very nominal cost.
3. Concentrated Chemicals - This effluent will be piped into a PVC lined pool where the water content will be allowed to evaporate. This procedure can be employed since we deal with a relatively small volume of concentrates. Periodically, the residue must be removed from the evaporation pool.
4. Waste Water - This is by far the largest volume of effluent that must be handled. We propose to pipe it into a PVC lined pool where a neutralizing agent will be added to bring the effluent PH factor to a level considered safe for surface disposal.

We have examined many means of solving our waste disposal problem and have concluded that the estimated cost for this method, $8,925, is the most economical approach. In addition to the outlay of cash, we may use as much as 300 hours of management engineering which is normally an overhead function.

Also note that we are including the cost of a security fence to surround the two pools and thus provide approximate safety precautions.

I hope you will be able to take prompt action on this request as the problem is real and needs correction. We are expecting a visit at any time by the State agency concerned with conformance to water pollution standards at which time we will be forced to take action.

E. M. Roby

EMR:kl

Attachments (2)

GULTON INDUSTRIES, INC.

REQUEST FOR CAPITAL EQUIPMENT

Division or Subsidiary	Date	Appr. Approved	Date Needed	H.O. Approved	Number
Data Systems Division	5/11/70		ASAP		

Quantity	Description	Cost
1 Job	System to accomplish waste disposal from printed circuit facility (see attached memo for discription)	$8,400

Project, model, product line for which equipment will be used.

Printed Circuit Facility

Can equipment be used elsewhere in your division or in other divisions?

No

How will this equipment pay for itself? How soon?

N/A Equipment is required to conform to State regulations and eliminate a possible water pollution problem.

Was this equipment requested in your annual budget? If not explain why?

No, however management was informed of the problem in November and given a budgetary cost figure.

Comments justifying need for equipment.

1. Elimination of water contamination and pollution problem existing in printed circuit shop effluent.
2. Conformance to state water regulations.

WASTE DISPOSAL ESTIMATES

	Subcontractor	Material	In-House Labor	Project Engineering Time
Clean and Inspect Septic Tank	$175.00			
Septic Tank Repair Costs	500.00			
Leaching Field Repair	600.00			
Dig Two Ponds	350.00			
2 Each - PVC Liners		$1,740.00	$ 75.00	
Kenics Turbulator		960.00		
Modification of Plumbing		1,300.00	200.00	
Hydrocarbon Pan		50.00		
Surveying	200.00			
Fence (2)	400.00	1,300.00		
Miscellaneous Contingency	375.00	450.00	250.00	
TOTALS	$2,600.00	$5,800.00	$525.00	300 hours

GULTON INDUSTRIES, INCORPORATED
Data Systems Division

Printed Circuit Shop
Waste Treatment Status Report

1.0 CHEMICAL ANALYSIS WORK OF THE WASTE STREAM

A series of Bio-Degradeable Oxygen Demand (BOD) tests have not yielded any conclusive results. Sanitary effluent material content varies significantly and has clouded the culture growth test results. (A culture growth is part of the analytical process to determine the BOD.) The allowable maximum (per state regulations) is 30 mg per liter.

The Chemical Oxygen Demand (COD) test procedures are finalized and the tests may be started if the chemist works additional hours. The allowable maximum (per state regulations) is 50 mg per liter. The approximate chemist time for a test group of two to four samples is six elapsed hours. All reagent chemicals have been received and made up to conduct this test series.

The initial settleable solids content tests indicate our effluent exceeds the present state maximum limits of 0.5 milliliters per liter. Much of this solid material is suspected to be developed via the sanitary effluent system.

A result of the initial chemical analysis work is the concept of dividing the effluent into two or three streams-sanitary, concentrated process, and dilute process effluents.

2.0 TREATMENT PROPOSALS RECEIVED

Over the past several months, several proposals for treatment of the Printed Circuit Shop effluent have been received. Initial investigation was directed toward treatment of the waste only. Subsequent literature searches and contact with Gulf General Atomic raised the possibility of recycling the treated and cleaned effluent portion to the Plating Shop process.

Quotations received to date are shown in Table I. Total costs include quoted equipment, installation, associated structure if required, and initial start-up materials. Annual operating costs for each proposal are not available as of this date. Projections based upon recent literature indicate a cost of $0.15 to $0.30 per gallon to treat concentrated effluents and $0.08 to $0.20 per gallon to treat diluted rinse solutions. This contrasts with costs of $0.09 to $0.16 per gallon to treat the present raw water to 1 meg or better quality. (Low volume costs obtained from the past Culligan Water Conditioning's invoices for the small deionized water system presently rented.)

2.0 TREATMENT PROPOSALS RECEIVED (Continued)

The following is an explanation of the methods of treatment proposed by the vendors contacted to date:

a. Reverse Osmosis

The contaminated waste stream is acidified to a pH of 5.0 to 6.0 then forced at high pressure against a special acetate type membrane in a tube form. There is a separation effect whereby the input stream passes through the membrane in a purified form leaving the contaminate ions on the input stream side of the membrane but forced into a reduced volume and higher concentrated stream. Recovery rates vary from 60% to 85%. The output waste concentrate stream still must be further processed to be acceptable to the sewer or the discharge stream.

b. Chemical Treatment

The chemical waste stream or streams are treated with an appropriate chemical to adjust the pH. This may be done on a continuous basis or in a batch treatment method. Cyanide type wastes must be reduced and this is accomplished most successfully with the batch technique. Certain heavy metals are best precipitated out and removed as a sludge. Again the method chosen is dependant upon the area, volume, and type of heavy metal chemical causing the contaminate. The resultant effluent is discharged to the stream or sewer. Initial data indicates that the present pH adjustment would involve a strong caustic material such as sodium hydroxide or ammonium hydroxide. A dry material would be stirred into a concentrated slurry and upon demand, be injected into the waste stream or pond. Agitation is required to ensure total mixing and neutralization. This is one reason batch treatment is the most common method in use for this type of neutralization. The new Dynamics's mixing method is gaining favor with space limited situations. A Kenics Corporation Turbulator is used to mix the two streams as the waste stream is generated. This is the method utilized in the Gulton Industries designed units.

c. Resin Treat Effluent

Resin treatment techniques are ion exchange systems very similar to the techniques used to obtain very high quality deionized water. The contaminated stream is passed through beds of cation attracting and anion attracting resins. The resultant stream may be cleaned just enough to allow safe discharge or may be treated to a level suitable for reusing the resultant water. The expended resins require regeneration

2.0 TREATMENT PROPOSALS RECEIVED (Continued)

or physical change out. Thus, a contaminated waste must still be disposed of, but the residue is generally suitable for direct discharge into the sewer or stream.

3.0 PROPOSED CONTINUED EFFORTS

The initial chemical analysis work revealed a large amount of human waste in some of the test samples. Other samples had low levels of copper and iron type contaminates. Because of this, an initial series of steps are recommended which will uncover our true process effluent condition.

a. Dig (grade) two ponds at two different levels behind the *Printed Circuit Shop.* These ponds would be merely earth dikes on a ravine presently downhill from the level of the building. Cost estimates furnished last September, 1969 were $250.00.

b. Replumb the Plating Shop's waste drain, using 3" diameter PVC pipe directly to the upper pond. This will allow the present septic tank system to be restored to its original sanitary effluent purposes. Cost estimates to install the PVC piping is $300.00.

c. Collect hydrocarbon solvents in an evaporation pan and allow the solvents to "flash off" into the air. At the low level disposal required this would not be in violation of the present air pollution law. An adequate pan could be made for $40.00 to $50.00. This would be located on the concrete slab behind the Printed Circuit Shop.

Thus, the total expenditure for this phase would only be $590.00 to $600.00. Clean out and repair of the present septic tank is estimated to be about $100.00 with an additional expense for repair of the leaching field possibly required. The cost figure for the septic tank is based upon our experience last December, 1969 with the septic tanks at the main building site. A recent quote on repair of the main plant leaching field, factored to the size of the field at the Printed Circuit Shop yields a guess of $600.00 for repair.

Monitoring costs of the process effluent are projected at $400.00. (Process Control Chemist) Additional supplies are estimated at $100.00.

4.0 "REGULATIONS GOVERNING WATER POLLUTION CONTROL IN NEW MEXICO"

Of specific concern is Regulation #4. Group contaminates are limited.

4.0 "REGULATIONS GOVERNING WATER POLLUTION CONTROL IN NEW MEXICO" (Continued)

Constituent	Concentration
Bio-Chemical Oxygen Demand (BOD)	30 mg/l
Chemical Oxygen Demand (COD)	50 mg/l
Settleable Solids	0.5 ml/l

Heavy metal contaminates are not spelled out in the regulation. Each entity (corporate or individual) discharging into a stream is required to submit the plans and resultant levels of all contaminants to the State Water Control Commission. At that time the level of heavy metals allowed will be defined. The particular heavy metals that we are concerned with at Gulton Industries are copper, iron, cyanide (CN radical) and phosphates.

A second Regulation #3 is also of concern to Gulton Industries because of our location with respect to the stream behind the plant. This reads: "No person shall dispose of any refuse in a natural watercourse or in a location and manner where there is a reasonable probability that the refuse will be moved into a natural watercourse by leaching or otherwise, provided that solids diverted from the stream and returned thereto are not subject to abatement under this regulation."

5.0 FINAL PROJECT DIRECTION

Upon completion of the analysis process of the effluent streams (approximately six to seven weeks) a study of the final solutions and alternatives can be made. Bids may be obtained for the proposals under final considersation and then made available for management consideration. This involves a total of 14 to 16 elapsed weeks from the start of the ponds. State approvals, lead time of the equipment manufacturers, and anticipated installation time brings the total projected project time to 36 to 51 weeks.

6.0 ATTACHMENT

Regulations Governing Water Pollution Control in New Mexico

TREATMENT PROPOSALS RECEIVED

TABLE I

COMPANY	METHOD OF TREATMENT	EQUIPMENT COSTS QUOTED	TOTAL COSTS (INCLUDES INSTALLATION)
Gulf General Atomic	Reverse osmosis and recycle 70% to 80%	$50,000	$60,000
Illinois Water Treatment Company	Neutralization with sodium hydroxide, discharge to stream	$36,750	$49,150
Gulton Designed Units/Ponds	Collect and neutralize to a second pond. Discharge overflow of second pond to stream		$ 4,500
Culligan Industrial Division (Elgin Water Conditioning)	Closed loop, resin (ion) exchange system. 90% to 95% of input water would be recovered for reuse.	$18,774	$21,500
Ionic International Incorporated	Chemical batch treatment then discharged to stream.	$19,985	$24,500

5 May 70

U.S. DEPARTMENT OF THE INTERIOR
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
REPORT OF INDUSTRIAL WASTE WATER DISPOSAL

"Working Copy"

FOR FWPCA USE

Fiscal Ending ____ 19 ____

I IDENTIFICATION

1. COMPANY NAME: Gaulton Industries
2. MAILING ADDRESS ZIP CODE: P.O. Box 8345, Albuquerque, N Mex.
3. PLANT NAME: Data Systems Division
4. PLANT LOCATION (city, township, county, State): 15,000 Central Ave. E Albuquerque 77112
5. PRINCIPAL PRODUCTS OR PROCESSES OF THIS PLANT: Electronic components, printed circuit boards.

a. S.I.C. CODES (1) PRIMARY ____ (2) OTHER ____

6. OPERATION

YEAR ROUND	SEASONAL	NO. OF WEEKS WORKED WITH	
Hours per week 40		1st shift 50	20

7. EQUIVALENT PRODUCTION — UNIT: Component Printed Circuit Board — AMOUNT PER OPERATING DAY: Not Available.

II WATER SOURCE(S) AND WASTE DISCHARGE POINT(S)

8. WATER INTAKE SOURCE(S)	NAME AND/OR TYPE OF SOURCE	PROCESS (1)	SANITARY ETC. (2)	NON-CONTACT COOLING WATER (3)
	a. PUBLIC WATER SYSTEM (Publicly or privately owned)			
	b. SURFACE WATER SOURCE			
	c. GROUND SOURCE (Give No. wells, etc.) 1 well	✓	✓	

9. WASTE DISCHARGE POINT(S)	NAME AND OR TYPE OF DISCHARGE POINT	SANITARY SEWAGE TREATED (1)	SANITARY SEWAGE UNTREATED (2)	INDUSTRIAL TREATED (3)	INDUSTRIAL UNTREATED (4)	NON-CONTACT COOLING WATER (5)
	a. PUBLIC SEWER (Publicly or privately owned) Private Septic tanks (2) — CHECK HERE IF THERE IS A SERVICE CHARGE	✓			✓	✓
	b. SURFACE WATER BODY Arroyo				✓	
	c. GROUND					

10. IF NON-CONTACT COOLING WATER IS DISCHARGED: a. TOTAL TEMP. DIFF. IN DEGREES F. IS ____ b. VOL. IN GALS OPERATING DAY IS ____
c. CHECK HERE IF RECIRCULATION IS INVOLVED ☐ AND SEE ITEM 10 OF INSTRUCTIONS

III INDUSTRIAL WASTE TREATMENT COSTS

11. APPROXIMATE EXPENDITURES FOR EXISTING WASTE TREATMENT FACILITIES ... SINCE 1960. (Under type, enter code numbers from Page 2 of instructions which correspond to the most advanced degree of treatment.)

	TYPE	YEAR PLACED IN OPERATION	ORIGINAL COST IN THOUSANDS
a. ORIGINAL FACILITY	septic tanks		2
b. ADDITIONS/IMPROVEMENTS (1)			
(2)			
c. TOTAL COST		(Thousands)	$ 2

REMARKS.

12. ESTIMATED CURRENT ANNUAL AMOUNT FOR OPERATION MAINTENANCE FOR TREATMENT (Thousands) $ .20

13. ESTIMATED EXPENDITURES FOR WASTE TREATMENT OR CONTROL DURING THE NEXT 5 YEARS BY CALENDAR YEAR (In thousands)

	19 70	19 71	19 72	19 73	19 74	5 YR TOTAL
a. FACILITIES AND OR IN-PLANT CONTROL	5,000	200				
b. OPERATION MAINTENANCE	500	500	500	500	500	
c. TOTAL COST	5500	700	500	500	500	(Thousands) $ 7.7

d. REMARKS

IV WATER ANALYSES

"Working Copy"

COMPLETE ONE OF THESE SHEETS FOR EACH SEPARATE WASTE [illegible] (SEE ITEM 14 OF INSTRUCTIONS) COMING FROM THE PLANT
IF A NUMBER OF DISCHARGES ARE MADE INTO THE SAME WATERWAY, PLEASE ARRANGE THESE SHEETS IN SEQUENCE FROM DOWNSTREAM TO UPSTREAM POINTS.

10. a. NAME OF SEPARATE WASTE DISCHARGE IS *Plating Plant Rinse*
b. DISCHARGE IS [ ] CONTINUOUS, [X] FROM BATCH PROCESS AND AVERAGES *3* TIMES PER DAY
WITH AN AVERAGE VOLUME OF *200* GALLONS PER BATCH *day*

11. POINT OF DISCHARGE (Check appropriate box)
a. [X] SEWER
b. [X] SURFACE WATER BODY
c. GROUND: (1) [ ] IRRIGATION, (2) [ ] INJECTION WELL, (3) [ ] POND, (4) [ ] OTHER (Specify)

12. METHOD OF SAMPLE COLLECTION AND ANALYSIS
a. SOURCE: (1) [ ] GRAB SAMPLE, (2) [ ] AVERAGE OF GRAB SAMPLES, (3) [ ] COMPOSITE SAMPLE, (4) [ ] CONTINUOUS
b. FREQUENCY: (1) [ ] DAILY, (2) [ ] WEEKLY, (3) [ ] MONTHLY, (4) [ ] OTHER (Specify) ______
c. ANALYSIS BY: (1) [ ] IN-PLANT PERSONNEL, (2) [ ] OUTSIDE LABORATORY
d. DATE(S) OF SAMPLE(S): (1) ______ (2) ______ (3) ______ (4) ______

13. WATER QUALITY INDICATORS (Where applicable)	a. INTAKE WATER		b. WASTE WATER EFFLUENT	
	BEFORE TREATMENT	AFTER TREATMENT	BEFORE TREATMENT	AFTER TREATMENT
	(1)	(2)	(1)	(2)
a. MAX. GAL./OPERATING DAY				
b. pH				
c. TEMPERATURE (in Deg. F)				
d. COLOR (Units)				
e. SPECIFIC CONDUCTANCE				
f. CHEMICAL ANALYSIS (mg/l)				
(1) TOTAL SOLIDS				
(2) TOTAL VOLATILE SOLIDS				
(3) TOTAL SUSPENDED SOLIDS				
(4) ACIDITY ($CaCO_3$)				
(5) ALKALINITY ($CaCO_3$)				
(6) 5 - DAY BOD				
(7) COD				
(8) OIL AND GREASE				
(9) CHLORIDE				
(10) SULFATE				
(11) SULFIDE				
(12) PHENOLS				
(13) NH_3-N				
(14) NO_3-N				
(15) [illegible]				
(16) ORGANIC N				
(17) KJELDAHL N				
(18) [illegible]				
(19) [illegible]				
(20) Cd				
(21) [illegible]				
(22) [illegible]				
(23) [illegible]				
(24) Hg				
(25) Zn				
(26) F				
g. OTHER CHARACTERISTICS				
(1)				
(2)				
(3)				
(4)				
(5)				
(6)				
(7)				
(8)				
(9)				
(10)				
(11)				

14. DESCRIPTION OF WASTE TREATMENT PROCESS(ES) (Enter code numbers from Page 2 of Instructions in the order in which the corresponding treatment steps occur.) *Rinse water from plating shop is discharged to septic tanks and to [illegible] - contains soap [illegible], dilute solutions of [illegible] chemicals, solvent, diluted solutions. Present method of disposal is not acceptable, [illegible] submitted plans for improvement.*

15. SIGNATURE AND TITLE *Michael J. Burkhart* DATE *5/25/70*

Gulton

Data Systems Division

Gulton Industries Inc.

Mailing Address:
P. O. Box 8345, Albuquerque, N.M. 87108

15000 Central Ave., East Albuquerque, N.M. 87112
Telephone (505) 299-7601 • TWX 910-989-1669

May 21, 1970

Mr. Max Feld, P.E., Supervisor
Water Pollution Control Unit
State of New Mexico
Health and Social Services Department
P.O. Box 2348
Santa Fe, New Mexico 87501

Dear Mr. Feld:

Enclosed is a brief description of the waste treatment concepts which were discussed during your visit to the Data Systems Division's Plant on Friday, May 15, 1970. The two (2) sketches, Attachments B and C show the plan view and elevation for the proposed ponds with respect to the service road right-of-way.

We, at Gulton Industries, Incorporated, again wish to thank you for your offer to assist us by reviewing our proposed process of treating waste effluent and also to assist in the BOD and COD analysis efforts.

If you have any questions regarding the attached proposal, do not fail to contact the undersigned.

Sincerely,

GULTON INDUSTRIES, INC.
Data Systems Division

R. W. Whitson

Mr. R. W. Whitson
Production Engineer

Attachments
RWW:by

GULTON INDUSTRIES, INCORPORATED
Data Systems Division

Waste Treatment Proposal
Printed Circuit Facility - Plant #2

14800 Central Avenue S.E.
Albuquerque, New Mexico

1.0 INTRODUCTION

This document outlines the plan for waste effluent treatment at Plant #2, also known as the Printed Circuit Shop. The site, located at 14800 Central Avenue S.E., is bounded on the north by Central Avenue, the south by Tijeras Canyon, and on the east and west by arroyos draining generally to the south.

The present effluent consisting of both the sanitary and industrial wastes is directed into a single septic tank on the south side of the facility. The overflow from the tank follows a small arroyo toward the southwest, and joins the arroyo on the west and then flows into the stream in Tijeras Canyon.

2.0 GENERAL PLAN

The waste materials will be separated into four (4) categories as follows:

1. Sanitary
2. Concentrated (heavy metal) solutions
3. Rinse water (dilute) solutions
4. Hydrocarbon solvents

The possible contents in each category of effluent are listed in Attachment A. The concentrated (heavy metal) solutions and the rinse water (dilute) solutions will be separately piped to two (2) ponds located behind and below the floor level of the Printed Circuit Shop. (See Attachments B and C.) Each pond will be lined with either PVC or similar material. The upper pond will collect the concentrated (heavy metal) solutions, while the rinse water solutions will flow into the lower pond. The sanitary wastes will be isolated and directed to the septic tank - leaching field system. Hydrocarbon solvents will not enter any of the above waste streams, but will be collected in a large steel evaporation pan.

2.1 Sanitary Waste System

The septic tank will be cleaned, inspected and repaired. The leaching field will be inspected and repaired. The estimated sanitary-waste-loading on this system is 600 gallons per day (twelve employees).

2.2 Concentrated (heavy metal) Solutions

The concentrated (heavy metal) solutions will be collected in the upper pond and the water content will be allowed to evaporate. The total annual accumulation rate is estimated to be 3600 gallons. The accumulated residues will be removed to a safe land-filled dump, approximately every 1-1/2 to 2 years.

2.3 Rinse Water (dilute) Solution

The rinse water solution will be directed to the lower pond and dispersed through a perforated PVC pipe spider located near the bottom of the pond. This placement will allow agitation and mixing of the discharging solution with the previously collected solutions. The overflow will be either a spillway or a weir on the southwest edge of the pond. The pH of this stream is anticipated to be between 6.5 and 7.5. If, during monitoring, it is determined that the pH is either frequently or consistently below 6.5, a Kenics Corporation "Turbulator" will be installed (Reference Attachment D). the stream pH will be monitored just outside of the building using a Universal Interloc Inc. Flow Probe Unit and Controller causing either N_aOH or NH_3 to be injected just ahead of the turbulator. Also, an alternate mixing method, injecting the NH_3 directly into the pond through a spider will be investigated.

The design capacity of the diluted solutions (rinse water) pond is 10,000 gallons. Elapsed transit time of a solution at peak production operating levels would be about 12 hours. The average elapsed transit time will be 24 to 36 hours.

2.4 Hydrocarbon Solvents

The hydrocarbon solvents will be discharged into a steel "flash-off" tray, located on the concrete slab behind the building. Accumulated residues will be periodically removed from the tray and disposed by way of the solid waste haulers.

3.0 SUMMARY

The proposed segregated processing of the industrial wastes is the simplest, yet most positive approach available. By eliminating occasional gross heavy metal concentrates from the large quantity of dilute effluent, handling and treatment of the dilute solution is more positive for continuous flows. The large lined ponds used

3.0 SUMMARY (Continued)

as collecting basins eliminate seepage of the raw industrial waste into the underground water system. Simpler quality control monitoring of the three segregated effluents will also be realized. Both ponds will be enclosed with an 8' high heavy duty chain-link fence with three (3) strands of barbed wire at the top.

GULTON INDUSTRIES, INCORPORATED
Data Systems Division

Waste Treatment Proposal
Printed Circuit Facility - Plant #2

ATTACHMENT A

WASTE STREAM CONTENTS

A. SANITARY

Rest room and "personal wash-up" only.

B. CONCENTRATED STREAM

1. Fe^{++}, Fe^{+++}
2. Cl^{-}
3. Cu^{++}, Cu^{+}
4. OH^{-}
5. Trace of Hg^{+}
6. HCl
7. Chelating agents
8. Wetting agents
9. Pd^{++}
10. Pt^{++}
11. Sn^{++}, Sn^{+4}
12. HCO_2Na
13. HCHO
14. SO_2^{++}
15. Perchloric acid
16. H_3PO_4
17. Na_2CO_3
18. Sulfamic acid
19. H_2SO_4
20. HF
21. Chromate conversion
22. Ammonium persulfate

ATTACHMENT A

WASTE STREAM CONTENTS
Page 2

B. CONCENTRATED STREAM (Continued)

23. Tin/Lead Fluroborate
24. Copper Fluroborate
25. Tin Sulfate
26. N_aOH
27. Nickel chloride and sulfamate

C. RINSE WATER (DILUTE) STREAM

This process stream is made up of waste pretreatment effluent from metal removal

1. All of the items in Section B are in very diluted quantities except chrome ions which will be kept with the concentrate stream.
2. Pumice
3. Detergent (Orvus K)
4. Analytical lab chemicals
5. Rinse water from the "acid" gold bath

D. HYDROCARBON SOLVENTS

1. Isopropyl alcohol
2. 1-1-2 trichloroethylene (inhibited)
3. 1-1-1 trichloroethane (inhibited)
4. Methylene chloride
5. Acetone
6. Xylene
7. A cellusolve type solvent used with Kodak KPR
8. Denatured ethyl alcohol

ENVIRONMENTAL SERVICES DIVISION

June 2, 1970

Gulton Industries Inc.
Data Systems Division
15000 Central Avenue East
Albuquerque, New Mexico 87112

ATTENTION: Mr. R.W. Whitson, Production Engineer

Dear Sir:

The proposal which you sent this office for review concerning waste treatment facilities for your industrial complex has been studied by our staff.

In general, the solutions that you proposed are acceptable to this Department. We are concerned, however, with the sizing requirements for the concentrated (heavy metal) solutions evaporation pond. Our analysis shows that a 10' x 20' pond with an operating depth of 3.5 feet will be sufficient to hold all liquid in this pond.

It is strongly recommended that the second (rinse water solutions) pond be constructed so as to also allow for total evaporation. The contents from this pond must be in conformance with Regulation #4 of the New Mexico Water Quality Control Commission at the time it flows into the dry arroyo. Considering the nature of this liquid and its Chemical Oxygen Demand and Biochemical Oxygen Demand, we feel that there would not be sufficient detention time to properly treat this waste.

A 1/8" butyl rubber lining or equal is recommended in place of the polethline lining on both ponds.

The hydrocarbon flash-off pan is acceptable as proposed.

Should you have any questions regarding this matter, please do not hesitate to call or write.

Sincerely,

John R. Wright, P.E. Chief
Water & Liquid Waste Section

JRW:MJB:af

Gulton

Data Systems Division

Gulton Industries Inc.

Mailing Address:
P. O. Box 8345, Albuquerque, N.M. 87108

15000 Central Ave., East Albuquerque, N.M. 87112
Telephone (505) 299-7601 • TWX 910-989-1669

June 23, 1970

Mr. John R. Wright
P.E. Chief
Water & Liquid Waste Section
Environmental Services Division
State of New Mexico Health & Social Services Dept.
P.O. Box 2348
Santa Fe, New Mexico 87501

Dear Mr. Wright:

Upon receipt of your recommendations of June 2, 1970, Gulton Industries, Incorporated, Data Systems Division took the following actions:

1. Concentrated Liquid Evaporation Pond

We agree that a 10' x 20' x 3.5' deep pond would be adequate for our present known waste volumne. The decision to build a larger pond, (19' x 19' x 3') is based upon provisions for any increased usage of existing concentrated solutions or a change in the manufacturing process which would require a larger evaporation capacity.

2. Rinse Water Pond

Your recommendation ("total evaporation" of all rinse water) presents two problems. The first problem is that the present water rights-use agreement requires that Gulton return the majority of the water withdrawn, back to the ground. The consumptive water right for 1970 and 1971 is 2.2 acre foot per annum. The second problem is space. To provide evaporation capability for 6,000 to 10,000 gallons of water per day over 5-1/2 days per week would require a pond with 4-1/2 acres of surface area. The liner cost at $0.50/square foot would approximately $90,000.

2. Rinse Water Pond (Continued)

In order to more accurately determine our anticipated requirements, arrangements were made through Mr. Michel Burkhart (Stream Biologist) with Mr. Richard Meyerhein (Chief of Chemistry) to determine the level of COD and BOD in the proposed rinse water system effluent. Three samples were submitted. The first sample was taken over a six-hour period, while all concentrated wastes were withheld from the drain system. The next two samples were taken without separation of the concentrated from the rinse water effluent. The results were:

SAMPLE DATE	SAMPLE NUMBER	COD	BOD
June 8, 1970	1381	19mg/l	9
June 10, 1970	1396	94mg/l	29
June 16, 1970	1455	434mg/l	Not Taken

An additional six to eight samples of rinse water waste will be submitted to Mr. Richard Meyerhein for continued COD Tests. Tests for heavy metal ions will also be made.

Enclosed are the revised detailed drawings of the rinse water effluent pond distribution spider. The number of holes per each 15/foot length was increased to 45 and the pipe diameter was decreased to one inch. The revised design will result in a more even distribution of the effluent through the entire pond contents. At an assumed flow rate of 6,000 gallons per day, and a liquid capacity of 10,000 gallons (determined by weir location), the average transit time through the pond to the weir of the effluent would be just over 36 hours. Samples from the rinse water stream had reaction precipitations develop in less than one hour during the sample collection period. The reaction precipitation materials will remain at or near the bottom of the rinse water pond and not appear in the overflow liquid.

3. Pond Lining Material

The original proposal submitted to you on May 21, 1970, was slightly vague as to lining material for the ponds. Three types of lining

3. Pond Lining Material (Continued)

material were considered. They were:

a. Synthetic rubber coated fabric supplied by Firestone

b. 0.030" thick tinted PVC

c. 0.030" thick Dupont Hypalon as supplied by Fabrico Manufacturing Company

Butyl rubber will not withstand the concentrated chemicals when exposed to the ultraviolet rays of the sun. Both Fabrico and Dupont now recommend the Hypalon material for this particular waste pond application. Mr. Steven Zimmer of the Fabrico Manufacturing Company is forwarding a sample swatch of 0.030" thick Hypalon to you for your examination. Firestone Coated Fabric Division advised that their coated fabric material would not withstand these particular concentrated chemical solutions.

4. Hydrocarbon Flash-Off Pan

The pan design has been completed. The installation target date is July 15, 1970.

We at Gulton Industries, Incorporated recommend that we continue forward with installation of the two waste ponds, all associated plumbing and the repair or replacement of the present sanitary system. With your approval of these steps, the ponds and plumbing could be in operation on or before the middle of August, 1970. Following the installation, the rinse water effluent would be isolated, tested, and then determined what further treatment, if any, would be required.

If you have any further questions, do not hesitate to call or contact us.

Sincerely,

GULTON INDUSTRIES, INC.
Data Systems Division

R. W. Whitson

Mr. R. W. Whitson
Production Engineer

Enclosure: as stated

SPEED MESSAGE

TO MAX FELD SUPV.
POLLUTION CONTROL UNIT
P.O. BOX 2348
SANTA FE, N.M. 87501

FROM R.W. WHITSON
GULTON INDUSTRIES INC
ALBUQUERQUE, N.M.

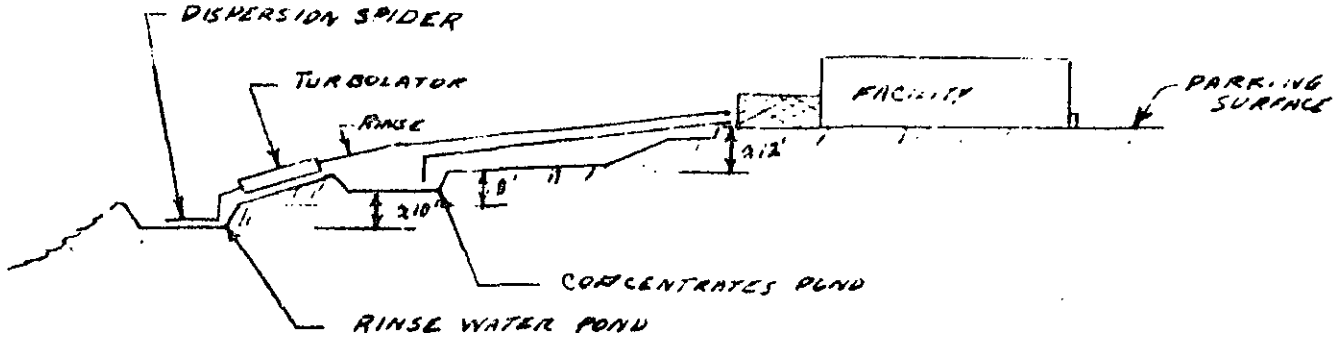
SUBJECT DUPONT HYPALON SYNTHETIC RUBBER

DATE 9 SEPTEMBER 1970

MAX, THIS SMALL PIECE OF HYPALON, 0.03" THICK MINIMUM, IS A SAMPLE OF THE LINING MATERIAL WE INTEND TO USE.

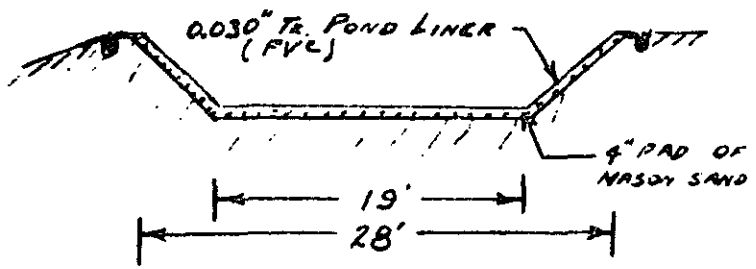
I WILL ALSO CHECK FABRICO MFG. CO IN CHICAGO TO DETERMINE WHAT ACTION THEY HAVE TAKEN TOWARD FURNISHING YOU A SAMPLE PLUS DETAILED SPECIFICATIONS.

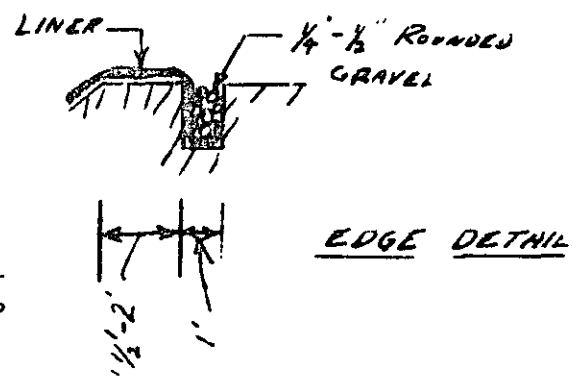
SIGNED Bob Whitson



NTS: 1/4" x 10'

ELEVATION VIEW





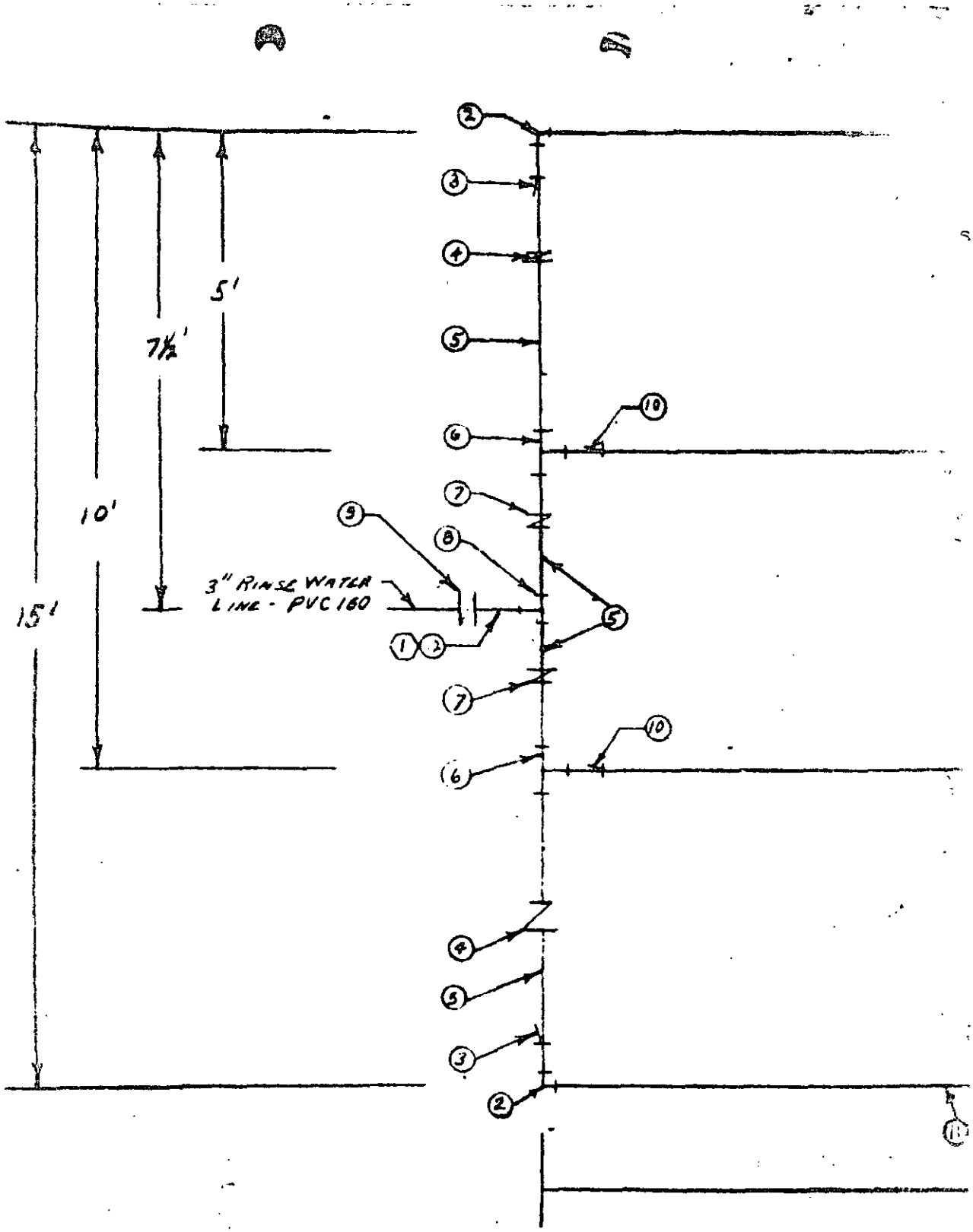
EDGE DETAIL

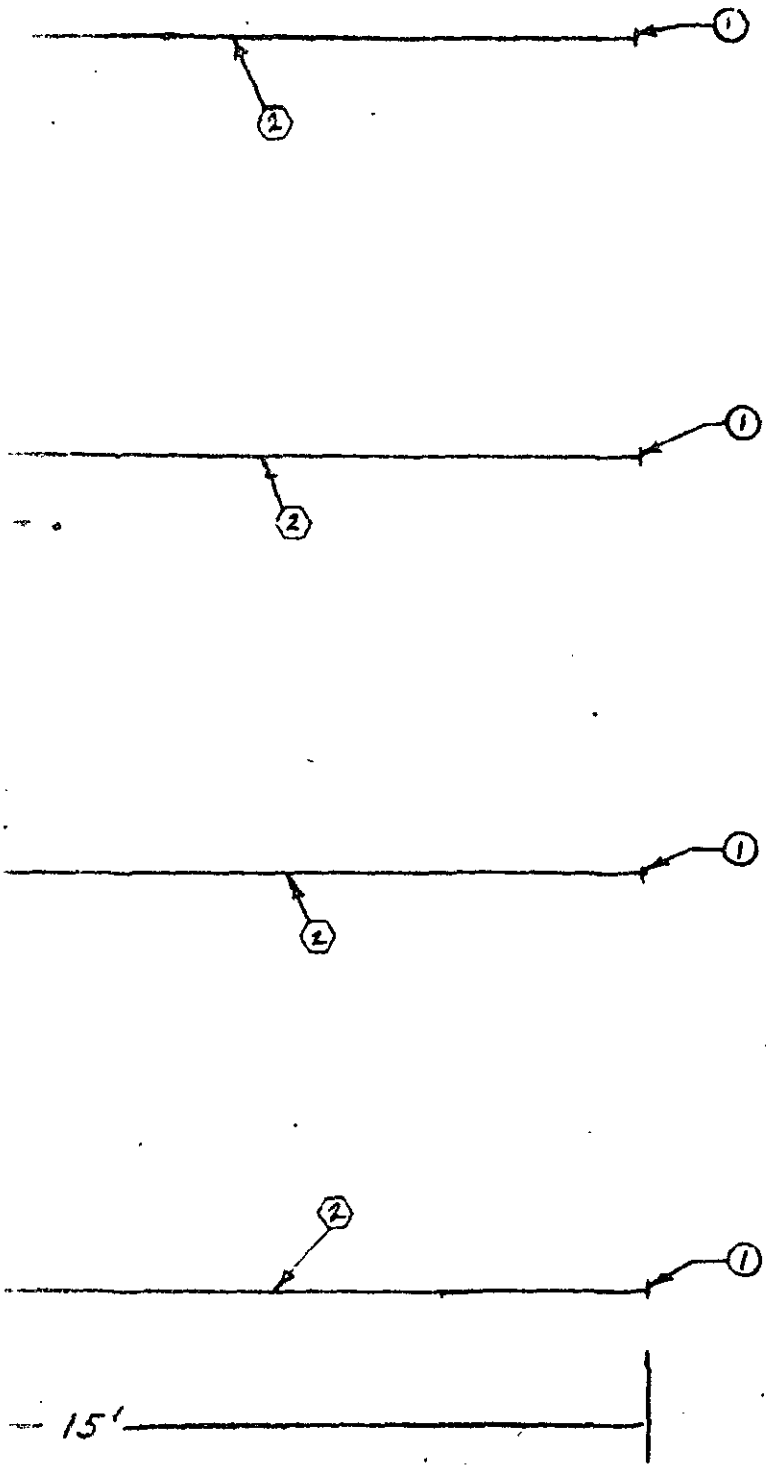
POND DETAIL

Gulton Industries Inc.
DATA SYSTEMS DIVISION
ALBUQUERQUE, NEW MEXICO

ELEVATION-WASTE PONDS

ATTACHMENT C


A
B
5'
7½'
10'
15'
3" RINSE WATER LINE - PVC 160



ITEM	DESCRIPTION
(1)	SCHED 40 1" CPVC
(2)	SCHED 40 1" 30°
(10) (3)	SCHED 40 2"x1" RED
(7) (4)	SCHED 40 2" SLOT
(5)	2" PVC 160 PIPE
(6)	2"x2"x2" T (SLOT) SCHED 40
(8)	SCHED 40 REDUCING T 2"x2"x1" (SLOT)
(9)	SCHED 40 2" SOC
(11)	1" PVC 160 PIPE
(12)	3" PVC 160 PIPE

(1) - ASSEMBLE (5) TO (9) AND (12) TO MATCH SLOPE OF POND WALL WITH (9) IN REACH FROM JIG

(2) - DRILL EACH PIPE ON THE UPPER SIDE, WITH 5/16" Ø HOLES ON 4" SPACING, 45 HOLES / 15' LENGTH

DISPERSION PIPE

- RINSE WATER

ENVIRONMENTAL SERVICES DIVISION

July 21, 1970

Gulton Industries, Inc.
P. O. Box 8345
Albuquerque, New Mexico 87108

Re: Gulton Industries'
Waste Water Discharges
Bernalillo County

Attention: Mr. R. W. Whitson
Production Engineer

Dear Mr. Whitson:

Your proposal of June 23, 1970 is generally acceptable. I would like to make the following comments:

1. The concentrated evaporation pond proposed is acceptable.

2. The rinse water pond as proposed is acceptable on an interim basis. If chemical precipitation is to be utilized for rinse water treatment, the pond may well provide an effluent that is not deleterious to downstream water use or the environment. After construction, this office will evaluate the quality of the effluent. Your organization should be advised that toxic substances cannot be present in the effluent in concentrations of 1/10 that is toxic to fish, wildlife, humans or domestic animals.

3. The pond lining material (Hypalon) is acceptable to this office.

4. The hydrocarbon flash-off pan design is acceptable.

This office appreciates working with you in the prevention of water pollution. It should be noted that the City of Albuquerque's master plan calls for extension of city sewer service at Tijeras Canyon, and it is recommended that Gulton Industries make every effort to connect to the city sewer as soon as possible.

It is my understanding that any modifications to waste water facilities constructed within a 5 mile radius of the city limits of Albuquerque must be approved by the City Planning Commission for conformance with the master plan.

Yours truly,

John R. Wright, P.E., Chief
Water & Liquid Waste Section

JRW:mlq

cc: Victor Bickel

Blind cc to: Richard Wilson
Ruben Ramirez
E.F. Hensch

ALBUQUERQUE DEPARTMENT
OF
ENVIRONMENTAL HEALTH
CITY HALL TELEPHONE 842-7451
BOX 1293, ALBUQUERQUE, N. M. 87103

July 24, 1970

Not Answered
Phone call to
Richard Burruelas
July 29, 70

John Wright, P.E., Chief
Water & Liquid Waste Division
Environmental Services Division
New Mexico Department of
Health & Social Services
P. O. Box 2348
Santa Fe, New Mexico 87501

Dear Mr. Wright:

We have received a copy of your letter of July 21st to Gulton Industries in regard to proposed waste water discharge.

To my knowledge our department has not been aware of their plans and still do not know what they propose that is "generally acceptable" to you.

We would appreciate it if in the future, we would be consulted prior to your office giving tentative approval to plans for waste water disposal in Bernalillo County.

We appreciate the authority vested and the expertise available in your division. We hope you can understand our position as a local department which must handle the day to day total involvement of our community.

Sincerely,

VR Bickel

Victor R. Bickel, R.S., M.P.H.
Director

VRB:mf

cc: Larry J. Gordon

P.S. Enclosed is a copy of a fairly recent agreement which concerns this type of situation.

GULTON INDUSTRIES, INCORPORATED
Data Systems Division

STATUS REPORT FOR PRINTED CIRCUIT SHOP'S WASTE TREATMENT PROJECT

August 17, 1970

1. ACCOMPLISHED TO DATE

The City Planning Commission granted their approval of Gulton's Waste Treatment Project Proposal. The project was first presented to Mr. Ruben Ramirez, Director of the Planning Department. Mr. Bill Goodman with the Environmental Health Department visited the pond site and the Printed Circuit Shop, then reviewed the chemical details of the proposed systems.

2. BEHIND SCHEDULE

Mr. Steve Zimmer (Fabrico Manufacturing) notified Gulton Industries on August 13, 1970, that their Hypalon material shipment will be delayed further. Based upon Fabrico's acceptance of the Hypalon material, the anticipated shipment of the pond liners will be approximately 9/18/70.

Mr. J. W. Ray (J. R. Trenching) delayed digging and installing the plumbing systems because of the recent heavy rains, this delay proved to be a sound decision.

A revised Project Schedule will be issued when Fabrico Manufacturing receives and accepts the Hypalon material.

3. ANALYSIS OF EFFLUENT

The heavy metals, types, and contents in the samples submitted to the State Health Laboratories are still unknown. The Electron Emission Equipment used to conduct these analyses have been inoperative.

Bob Whitson

R. W. Whitson
Production Engineer

Attachments

PRINTED CIRCUIT SHOP'S

WASTE TREATMENT PROJECT PLAN

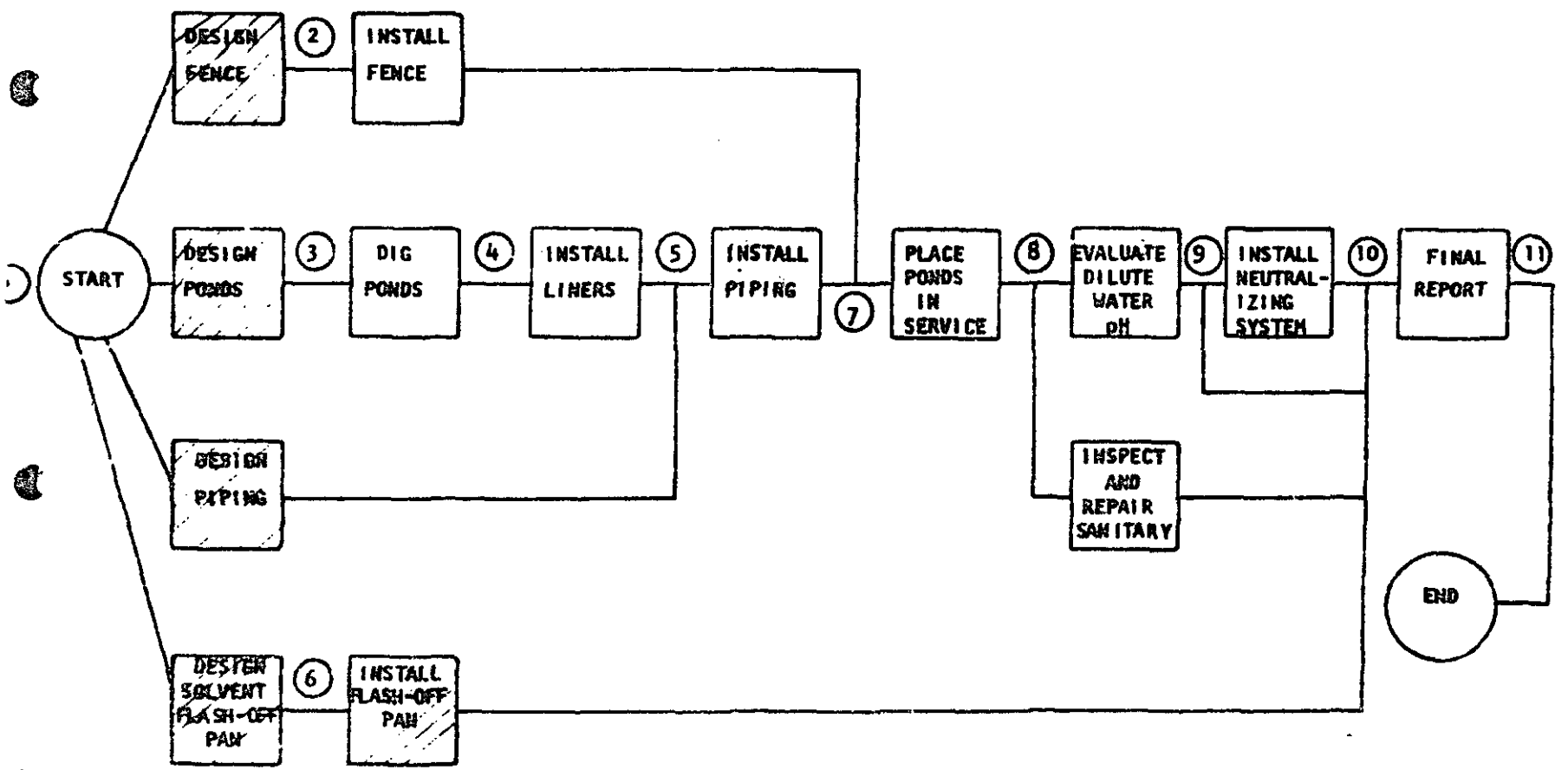
DATE: August 17, 1970

TASK NUMBER	DESCRIPTION	START DATE		COMPLETION DATE		REMARKS
		Schedule	Actual	Schedule	Actual	
	Project Start	5/25/70			5/25/70	
1-2	Design Fence	6/22/70	6/25/70	6/26/70	6/30/70	COMPLETE
2-7	Install Fence	7/30/70		8/05/70		P.O. Placed with Cardinal
1-3	Design Ponds			5/25/70	5/25/70	COMPLETE
3-4	Dig Ponds	7/15/70		7/22/70		P.O. Placed with J.R. Trenching
4-5	Install Liners	7/23/70		7/27/70		Fabrico to ship 9/18/70
1-5	Design Piping	5/27/70	5/27/70	6/03/70	6/03/70	COMPLETE
1-6	Design Flash-Off Pans	6/09/70	6/08/70	6/10/70	6/08/70	COMPLETE
5-7	Install Piping	7/22/70		7/29/70		P.O. Placed with J.R. Trenching
7-8	Place Ponds In Service	8/03/70		8/26/70		
8-9	Evaluate Dilute Water pH	8/10/70	6/08/70*	8/26/70		*Tapped pipe chem. anal. by State Lab.
8-10	Inspect & Repair Sanitary System	7/31/70		8/07/70		
9-10	Install Neutralizing System (if required)	8/27/70		10/28/70		
6-10	Install Solvent Flash-Off Pan	7/10/70		7/10/70	7/09/70	COMPLETE
10-11	Final Report			9/5/70 / 11/10/70 ①		
	Project Completion			9/5/70 / 11/10/70 ①		① 9/5/70 date applies if 9-10 not required

PRINTED CIRCUIT SHOP'S

WASTE TREATMENT

PROJECT PLAN



RINSE WATER ANALYSIS DATA

DATE	NUMBER	COD ① mg/l	BOD ② mg/l	HEAVY METALS mg/l	REMARKS
6-8	1381	19	9		
6-10	1396	94	29		
6-16	1455	434			
6-18	1509	32		Cu - .26	
6-22	1547				
6-23	1567				
6-23	1627	34		Fl - 2.9	
7-1	1639	190		Cu - .22 Fl - 3.30	
7-15	1755				
7-16	1765				

DIETZGEN ① QUANTITY 50 mg/l ② MAX. LIMIT 30 mg/l

File

Gulton

Data Systems Division

Gulton Industries Inc.

Mailing Address:
P. O. Box 8345, Albuquerque, N.M. 87108

15000 Central Ave., East Albuquerque, N.M. 87112
Telephone (505) 299-7601 • TWX 910-989-1669

August 24, 1970

Mr. John R. Wright, P.E. Chief
Water & Liquid Waste Section
Environmental Services Division
State of New Mexico Health and
Social Services Department
P.O. Box 2348
Santa Fe, New Mexico 87501

Dear Mr. Wright:

I am enclosing for your information a copy of the latest status report for the Printed Circuit Shop's Waste Treatment Project, dated August 17, 1970.

I have also sent a copy of this report to Mr. Ruben Ramirez, Director of the Planning Department.

If you have any questions concerning this report, please do not hesitate to contact me.

Sincerely,

GULTON INDUSTRIES, INC.
Data Systems Division

R. W. Whitson

Mr. R. W. Whitson
Production Engineer

Enclosure: As stated
RWW:by

Gulton

Data Systems Division

Gulton Industries Inc.

Mailing Address
P. O. Box 5348, Albuquerque, N.M. 87108

15000 Central Ave., East Albuquerque, N.M. 87112
Telephone (505) 299-7601 • TWX 910-989-1669

October 9, 1970

Mr. John R. Wright, P.E. Chief
Water & Liquid Waste Section
Environmental Services Division
State of New Mexico Health and
Social Services Department
P.O. Box 2348
Santa Fe, New Mexico 87501

Dear Mr. Wright:

I am enclosing for your information a copy of the latest status report for the Printed Circuit Shop's Waste Treatment Project, dated October 8, 1970.

I have also sent a copy of this report to Mr. Ruben Ramirez, Director of the Planning Department.

If you have any questions concerning this report, please do not hesitate to contact me.

Sincerely,

GULTON INDUSTRIES, INC.
Data Systems Division

R. W. Whitson

Mr. R. W. Whitson
Production Engineer

Enclosure: As stated
RWW:by

GULTON INDUSTRIES, INCORPORATED
Data Systems Division

STATUS REPORT FOR PRINTED CIRCUIT SHOP'S WASTE TREATMENT PROJECT

October 8, 1970

1. ACCOMPLISHED TO DATE

The upper (concentrated solution) and lower (rinse water solution) ponds have been excavated and lined.

The pipe trench routing has been located by the plumber. Trenching is to begin on October 8, 1970.

The fence has been redesigned from a 35' x 85' to a 46' x 94' rectangle. Fence installation began on October 7, 1970. The estimated completion date is Friday, October 9, 1970.

2. NEW DEVELOPMENTS

I have initiated an investigation to control erosion around the ponds. Contacts were made with the County Agents Office and Mr. Bill Bixby, Grass Specialist for the Forrest Service.

Mr. Bixby reviewed our ponds then stated that the Forrest Service Landscape Architect will have to review our situation and work with Gulton on this problem.

3. PROJECT SCHEDULE

Attached is a Project Plan with the dates revised.

4. PHOTOGRAPHS

Photographs of construction progress are presently being processed. These photographs will be retained in the project file.

R. W. Whitson
Production Engineer

Attachments

PRINTED CIRCUIT SHOP'S

WASTE TREATMENT PROJECT PLAN

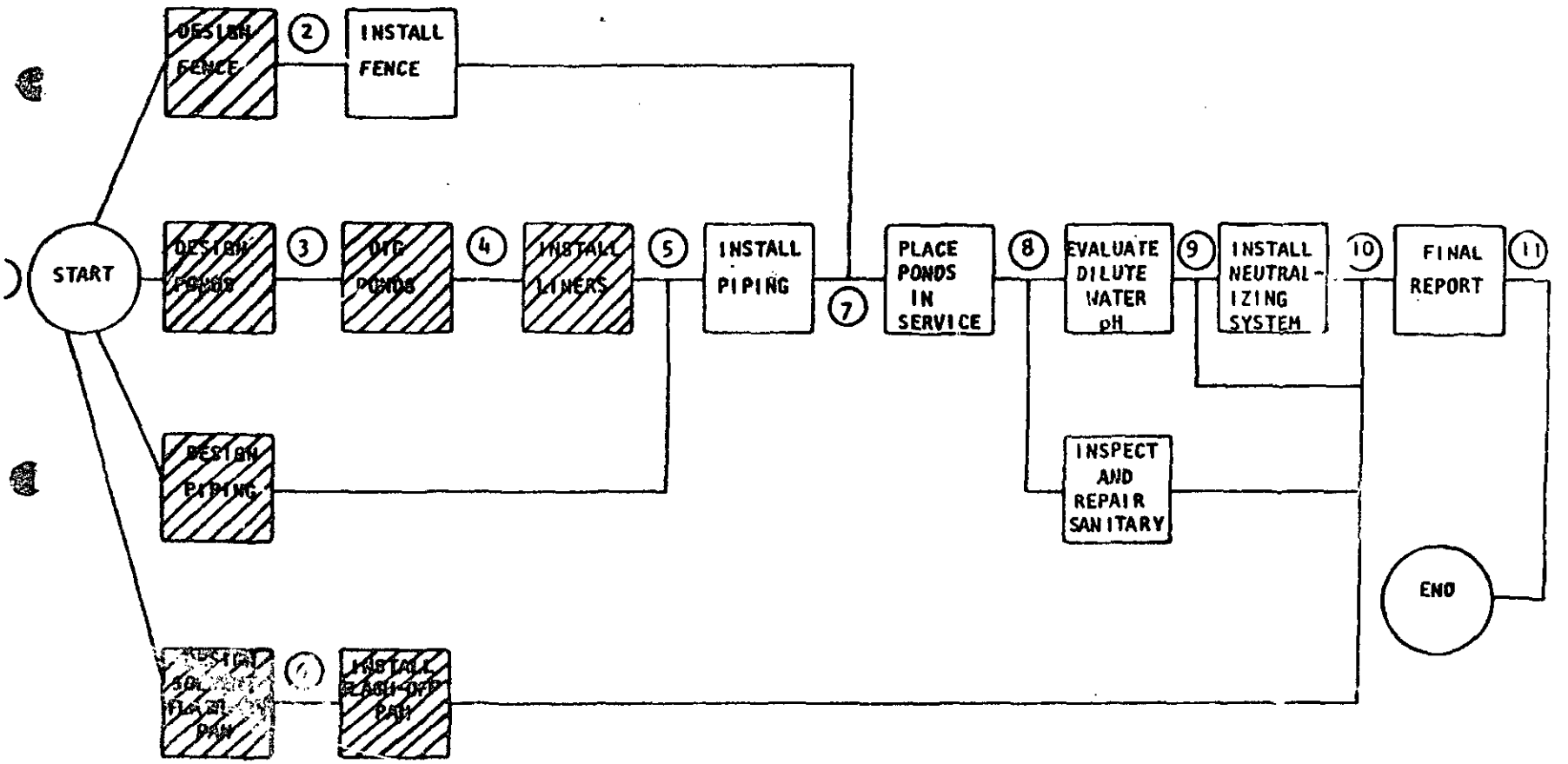
DATE: October 8, 1970

TASK NUMBER	DESCRIPTION	START DATE		COMPLETION DATE		REMARKS
		Schedule	Actual	Schedule	Actual	
	Project Start	5/25/70			5/25/70	
1-2	Design Fence	6/22/70	6/25/70	6/26/70	6/30/70	COMPLETE
2-7	Install Fence	7/30/70	10/07/70	10/13/70		Started 10/7/70
1-3	Design Ponds			5/25/70	5/25/70	COMPLETE
3-4	Dig Ponds	7/15/70	9/30/70	10/09/70	10/06/70	COMPLETE
4-5	Install Liners	7/23/70	10/06/70	10/10/70	10/07/70	COMPLETE
1-5	Design Piping	5/27/70	5/27/70	6/03/70	6/03/70	COMPLETE
1-6	Design Flash-Off Pans	6/09/70	6/08/70	6/10/70	6/08/70	COMPLETE
5-7	Install Piping	7/22/70		10/16/70		
7-8	Place Ponds In Service	8/03/70		10/20/70		
8-9	Evaluate Dilute Water pH	8/10/70		10/23/70		
8-10	Inspect & Repair Sanitary System	7/31/70		10/23/70		
9-10	Install Neutralizing System (if required)	8/27/70		12/30/70		
6-10	Install Solvent Flash-Off Pan	7/10/70		7/10/70	7/09/70	COMPLETE
10-11	Final Report			11/15/70 ① 1/15/71		
	Project Completion			11/15/70 ① 1/15/70		① /15/70 date applies if task 9-10 not require

PRINTED CIRCUIT SHOP'S

WASTE TREATMENT

PROJECT PLAN



RINSE WATER ANALYSIS DATA

DATE	NUMBER	COD (1) mg-l l	BOD (2) mg-l l	HEAVY METALS mg-l l	REMARKS
6-8	1381	19	9		
6-10	1396	94	29		
6-16	1455	434			
6-18	1509	32		Cu - .26	
6-22	1547				
6-23	1567				
6-29	1627	34		Fl - 2.9	
7-1	1639	190		Cu - .22 Fl - 3.30	
7-15	1755	1636		Fl - 4.5; Cu - 1.22 Phos - 0.05	
7-16	1765	25		Fl - 3.2; Phos - 0.05 Cu - 0.40	

DEM 10002
REV. 12-1-68

STATE OF NEW MEXICO
INTRA-AGENCY MEMO

TO	NAME	COUNTY/DISTRICT OR MAIL STA. & BOOTH NO.
	Mr. Lewis Grey, P.E., Supervisor	
	Engineering & Design Unit	

DATE
10/28/70

FROM John H. Wright, Chief
Water Quality Section

SUBJECT
Work Assignment

CAT. COUNTY CASE NO. IND. NO. NAME

RE:

Please investigate the industrial waste water treatment facilities for Gulton Industries in Albuquerque.

Contact Mr. Wision at 299-7601, extension 305, and arrange to sample the waste water discharge and review the installation.

Schedule your investigation for late November or early December.

JRW:fl

Gulton

Data Systems Division

Gulton Industries Inc.

Mailing Address
P. O. Box 8345, Albuquerque, N.M. 87108

15000 Central Ave., East Albuquerque, N.M. 87123
Telephone (505) 299-7601 • TWX 910-989-1669

November 9, 1970

Mr. John R. Wright, P.E. Chief
Water & Liquid Waste Section
Environmental Services Division
State of New Mexico Health and
Social Services Department
P.O. Box 2348
Santa Fe, New Mexico 87501

Dear Mr. Wright:

I am enclosing for your information a copy of the latest status report for the Printed Circuit Shop's Waste Treatment Project, dated November 9, 1970.

I have also sent a copy of this report to Mr. Ruben Ramirez, Director of the Planning Department.

If you have any questions concerning this report, please do not hesitate to contact me.

Sincerely,

GULTON INDUSTRIES, INC.
Data Systems Division

R. W. Whitson

Mr. R. W. Whitson
Production Engineer

Enclosure: As stated
RWW:by

ITTON INDUSTRIES, INCORPORATED
Data Systems Division

STATUS REPORT FOR PRINTED CIRCUIT SHOP'S WASTE TREATMENT PROJECT

November 9, 1970

1. ACCOMPLISHED TO DATE

The plumbing process was completed on October 16, 1970. Both the concentrated solution (upper), and the diluted rinse water solution (lower) ponds are in operation.

A chain-link fence has been built to surround both the upper and lower ponds.

Signs have been installed strategically throughout the Printed Circuit building. These signs designate the type of waste liquid which may be poured into the waste drain.

A second solvent flash-off pan for the exclusive disposal of solvent from the vapor degreaser has been installed. The degreaser piping has been modified so the waste solvent flows directly to the flash-off pan.

The pH of the effluent from the lower (rinse water) pond was initially tested to 6.4. The water going into the plating process measured 6.8 (Hydron papers were used for these tests).

Grass seed has been purchased for sowing around the areas cut by the dozer blade. Russian Olive trees have been ordered (delivery in April, 1971) from the State Forestry Department.

2. TESTING

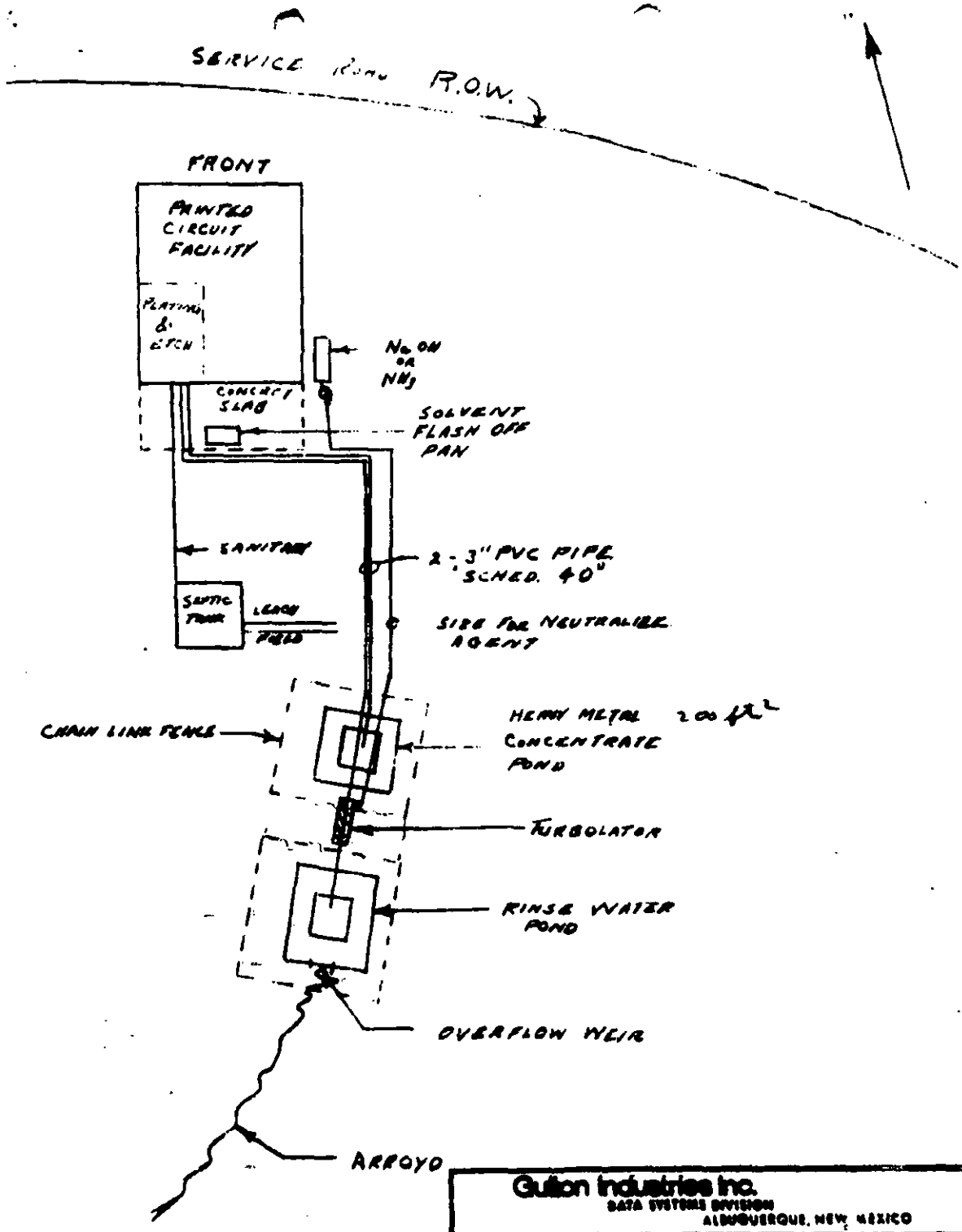
Mr. John Wright, Chief of the Environmental Services Division, stated that samples of the pond effluent will be taken approximately at the end of November. The results of these analyses will determine if any further treatment action will be required.

3. PHOTOGRAPHS

Attached are reproductions of photographs taken of the ponds during construction and the completed system.

R. W. Whitson
Production Engineer

Attachments



NTS: 1" APPROX. 10'

Gulton Industries Inc.
DATA SYSTEMS DIVISION
ALBUQUERQUE, NEW MEXICO

PLAN VIEW - WASTE PONDS

ATTACHMENT B

Environmental Services Division

June 9, 1971

Mr. J. M. Taylor
Product Manager
Dynachem Corporation
13000 E. Firestone Blvd.
Santa Fe Springs, California

Dear Mr. Taylor:

As you are aware, Galton Industries in Albuquerque, New Mexico is using a dye purchased from your company. This product (2, 3-dihydro 2, 2-dimethyl Tripyrinidine manufactured by B.A.S.F.) is being discharged in plant effluent and may reach surface and ground water supplies. I am reassured by your statement that the chemical is used in ballpoint pens and is "non-toxic". However, before a definite decision can be reached on the safety of the product I will need to review basic acute and chronic toxicity data as well as any information on possible mutagenic properties of the compound.

Kindly forward references or unpublished works which will provide the basic information on product toxicity.

Sincerely yours,

William A. Coniglio, PHS
Program Consultant
Toxic Environmental Chemical Unit

WAC/mrg

ENVIRONMENTAL SERVICES DIVISION

June 9, 1971

Mr. R.W. Whitson
Production Engineer
Gulton Industries, Inc.
15000 Central Avenue, East
Albuquerque, New Mexico 87112

Dear Mr. Whitson:

Enclosed is a copy of our results of the survey of composite samples taken on February 24, 1971 at Gulton Industries' wastewater discharge from the plating shop.

The results indicate that the present treatment process is obtaining little or no reductions in the parameters we measured. The results do indicate some detention effects. We would like to hear from your office on what changes or improvements you might propose to upgrade your effluent on this waste discharge. The present discharge does not meet the present New Mexico Water Quality Regulations.

If you have any questions concerning this report, please do not hesitate to contact us.

Sincerely,

Lewis C. Gray, P.E., Supervisor
Engineering & Design Unit
Water Quality Section

LCG:af

Enclosure

6-9-71

GULTON INDUSTRIES - SUMMARY

SAMPLING POINT

Component	Water Supply	Influent to Dilute	Effluent from Dilute	(Water Soluble) Sediment
Sodium (as Na)	46.9 mg/l	97.8 mg/l	103.5 mg/l	14.9 mg/l
Iron - Total (as Fe)	0.08 mg/l	2.04 mg/l	1.4 mg/l	Not Valid
Chloride (as Cl)	49.0 mg/l	295.0 mg/l	301.0 mg/l	22.0 mg/l
Fluoride (as F)	2.2 mg/l	4.3 mg/l	6.5 mg/l	Not Valid
Sulfate (as SO_4)	1.0 mg/l	2.0 mg/l	2200 mg/l	38.0 mg/l
Phosphate (as PO_4)	0.1 mg/l	< 0.05 mg/l	< 0.05 mg/l	< 0.05
Surfactance (as LAS)	0.05	1.0 @ LAS	0.6	Not Valid
Conductance (uv)	1550	1700	1700	Not Valid
pH	7.6	7.5	7.2	Not Valid
Zinc	0.18 mg/l	0.19 mg/l	0.33 mg/l	
Cd	< 0.01 mg/l	< 0.01 mg/l	0.16 mg/l	< 0.01 mg/g soil
Ni	< 0.5 mg/l	< 0.5 mg/l	< 0.5 mg/l	0.50 mg/g soil
Pb	< 0.02 mg/l	< 0.02 mg/l	< 0.02 mg/l	0.1 mg/g soil
Sn	< 2.0 mg/l	< 2.0 mg/l	< 2.0 mg/l	< 2.0 mg/g soil
Cr^{+6}	< 0.01 mg/l	< 0.01 mg/l	0.15 mg/l	
BOD			35.0 mg/l	
COD		110 mg/l	90.0 mg/l	
Settleable Solids			2.4 ml/l	
Cu (copper)	0.04	0.55 mg/l	0.22 mg/l	0.1 mg/gr soil

Collection Date - February 24, 1971
Report to H&SSD - April 9, 1971

SPEED MESSAGE

TO Lewis Grey Inc
Environmental Sciences Div
P.O. Box 2545
Santa Fe, New Mex. 87501

FROM R.W. Whitson
Gulton Industries Inc
Box 8345
Albuquerque, N.Mex. 87108

SUBJECT Your Letter of June 9, 1971

DATE 14 June 1971

Lewis I believe that we need to sit down again and review what has been done, take what direction(s) do we take. I feel very concerned since the answers seems that I can not trace to our process.

I understand that you will not be back in the office until 21 June. Thus Gulton may have to be low on your priority list, but I do want to get this problem corrected.

SIGNED S.L. Whitson

670

REFERENCE 5

STATE OF NEW MEXICO
WATER QUALITY DIVISION
Permits and Regulations
P.O. Box 2348
Santa Fe, NM 87503

(505) 827-3121

Environmental Improvement Agency

December 4, 1975

Gulton Industries
15000 Central Avenue, SE
Albuquerque, NM 87123

RE: Application for NPDES Permit

Gentlemen:

On November 25, 1975 I was informed by a representative of the Albuquerque Environmental Health Department that your company was discharging effluent into a tributary to the Tijeras Creek. At approximately 9:30 A.M. the same day, I investigated the reported discharge and confirmed that indeed a discharge from your waste treatment lagoons was flowing into an unnamed watercourse, tributary to Tijeras Creek.

As the Federal Water Pollution Control Act Amendments of 1972, (PL 92-500) establishes that the discharge of any pollutant by any person shall be unlawful, except as in compliance with section 402, National Pollutant Discharge Elimination System, which requires a permit to discharge, I am enclosing two NPDES applications for Permit to Discharge-Short Form C, along with the accompanying instructions. One application should be completed by your company and returned to the appropraite U.S. Environmental Protection Agency regional office, as indicated in the instructions. The extra application is provided for your files.

If you have any additional questions, please don't hesitate to contact this office.

Sincerely,

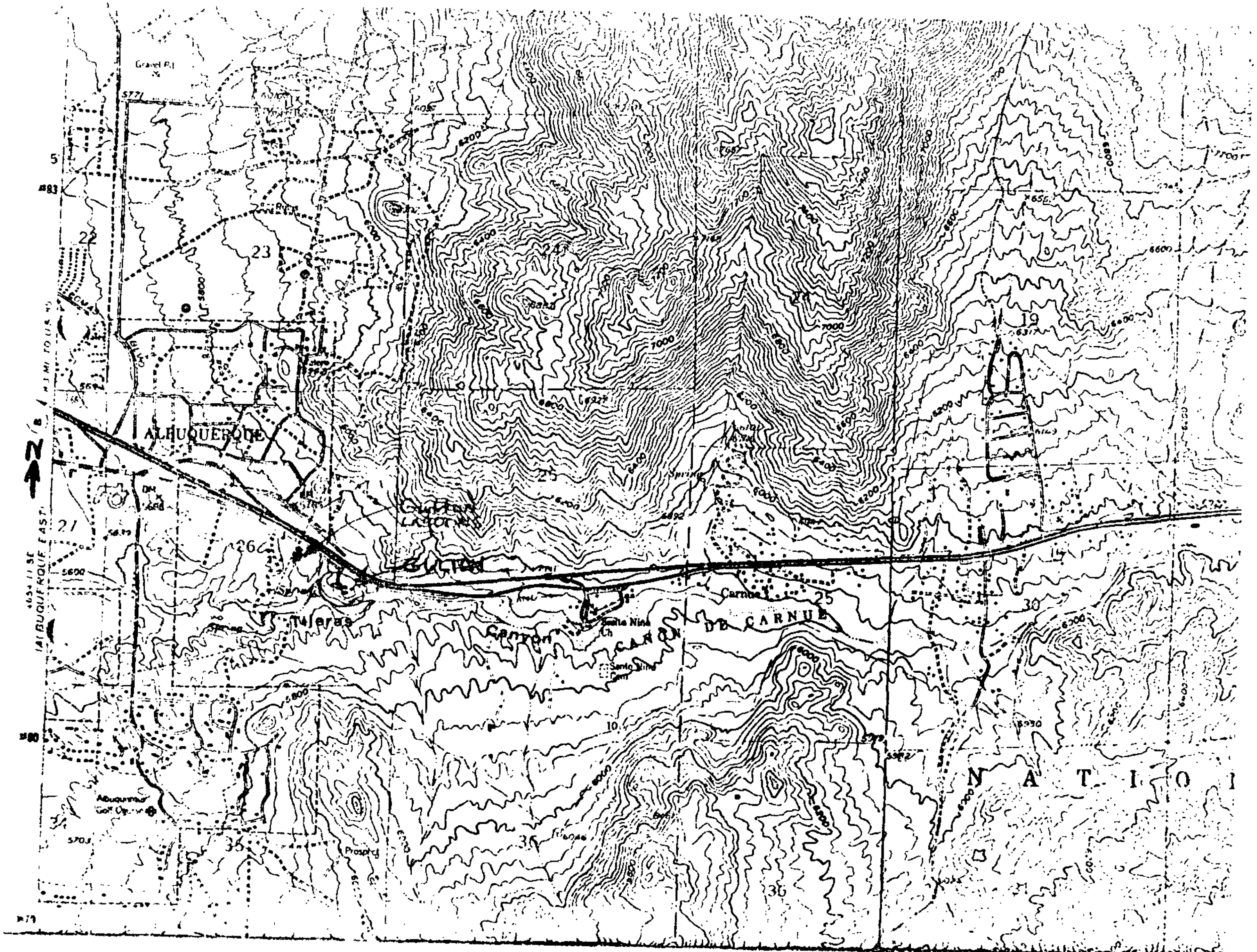
Charles Nylander

Charles Nylander
Environmental Scientist II

CN:nr

Enclosure as stated

cc: Mr. Fred Woods, U.S. E.P.A., Region VI
Mr. Eloy Romero, Albuquerque Environmental Health Dept.



ALBUQUERQUE
Gravel Pit
N
Tijeras
Canyon
CAÑON DE CARNUE
Carnue
Spring
Prospect
Albuquerque Golf Course
N A T I O
22
23
24
19
27
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25
30
35
36

Data Systems Division
Gulton Industries Inc.

15000 Central Avenue S.E.
Albuquerque, New Mexico 87123
505-299-7601
TWX 910-989-1669

December 15, 1975

State of New Mexico
Water Quality Division
P. O. Box 2348
Santa Fe, New Mexico 87503

Mr. Charles Nylander:

Attached is the completed short form C and fee. In the form of back up information from our files the following was found:

In 1969 Gulton designed and obtained funding for the Waste Pond disposal system. A model was built, the various substances and ions contained in the raw discharge were identified, and the plan was presented to the New Mexico Environmental Services Division, and the City of Albuquerque planning Commission.

Approval was granted July 21, 1970 by Mr. John Wright, Chief PE of State of New Mexico Environmental Services Division and Ruben Ramerey of the City of Albuquerque.

The discharge of the settling pond, which is rinsing water only, is checked for B. O. D., C. O. D., and settleable solids once a month. The concentrated chemicals are held in a separate pond which has no over flow. Volital liquids are placed in flash pans which utilize evaporation as a disposal system.

If I can be of any further service to please do not hesitate to call.

RECEIVED
DEC 18 1975
WATER QUALITY SECTION

Sincerely

H. P. Weeber
Manufacturing Manager

cc: Mr. Fred Woods U. S. EPA Regions VI
Mr. Eloy Romero Albuquerque Environmental Health Department

HPW:mg

Form Approved
OMB No. 158-R0096

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
APPLICATION FOR PERMIT TO DISCHARGE - SHORT FORM C

FOR AGENCY USE: APPLICATION NUMBER | DATE RECEIVED (YEAR, MO., DAY)

To be filed only by persons engaged in manufacturing and mining

Do not attempt to complete this form before reading accompanying instructions

Please print or type

1. Name, address, location, and telephone number of facility producing discharge

A. Name Culton Industries, Inc.

B. Mailing address

1. Street address 15000 Central SE

2. City Albuquerque 3. State New Mexico

4. County Bernalillo 5. ZIP 87123

C. Location:

1. Street same

2. City _____ 3. County _____

4. State _____

D. Telephone No. 505 (Area Code) 299-7601

2. SIC [ ][ ][ ][ ] (Leave blank)

3. Number of employees 230

If all your waste is discharged into a publicly owned waste treatment facility and to the best of your knowledge you are not required to obtain a discharge permit, proceed to item 4. Otherwise proceed directly to item 5.

4. If you meet the condition stated above, check here ☐ and supply the information asked for below. After completing these items, please complete the date, title, and signature blocks below and return this form to the proper reviewing office without completing the remainder of the form.

A. Name of organization responsible for receiving waste _____

B. Facility receiving waste:

1. Name _____

2. Street address _____

3. City _____ 4. County _____

5. State _____ 6. ZIP _____

5. ☒ Principal product, ☐ raw material (Check one) Military - Aero Space Instrumentation

6. Principal process Manufacture of Metal work, Printed Circuit Boards, and assembly of

7. Maximum amount of principal product produced or raw material consumed per (Check one) the above.

Basis	Amount							
	1-99 (1)	100-199 (2)	200-499 (3)	500-999 (4)	1000-4999 (5)	5000-9999 (6)	10,000-49,999 (7)	50,000 or more (8)
A. Day	X							
B. Month								
C. Year								

EPA Form 7550-6 (1-73)

8. Maximum principal product produced or raw material consumed, reported in item 7, is measured in (Check one):

A. ☐ pc B. ☐ tons C. ☐ barrels D. ☐ bushels E. ☒ square feet

F. ☐ [illegible] G. ☐ pieces or units H. ☐ other, specify _____

9. (a) Check here if discharge occurs all year ☒, or

(b) Check the month(s) discharge occurs:

1. ☐ January 2. ☐ February 3. ☐ March 4. ☐ April 5. ☐ May 6. ☐ June

7. ☐ July 8. ☐ August 9. ☐ September 10. ☐ October 11. ☐ November 12. ☐ December

(c) Check how many days per week: 1. ☐ 1 2. ☐ 2-3 3. ☒ 4-5 4. ☐ 6-7

10. Types of waste water discharged to surface waters only (check as applicable)

Discharge per operating day	Flow, operating gallons per day					Volume treated before discharging (percent)				
	0.1-999 (1)	1000-4999 (2)	5000-9999 (3)	10,000-49,999 (4)	50,000 or more (5)	None (6)	0.1-29.9 (7)	30-64.9 (8)	65-94.9 (9)	95-100 (10)
A. Sanitary, daily average										
B. Cooling water, etc. daily average										
C. Process water, daily average	X									X
D. Number per operating day for total discharge (all types)	10									

11. If any of the three types of waste identified in item 9, either treated or untreated, are discharged to places other than surface waters, check below as applicable.

Waste water is discharged to:	Average flow, gallons per operating day				
	0.1-999 (1)	1000-4999 (2)	5000-9999 (3)	10,000-49,999 (4)	50,000 or more (5)
A. Municipal sewer system					
B. Underground well					
C. Surface tank					
D. Evaporation lagoon or pond	X				
E. Other, specify					

12. Number of separate discharge points: A. ☒ 1 B. ☐ 2-3 C. ☐ 4-5 D. ☐ 6 or more

13. Name of receiving water or waters Tijeras Arroyo

14. Does your discharge contain or is it possible for your discharge to contain one or more of the following substances added as a result of your operations, activities, or processes: ammonia, cyanide, aluminum, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc, phenols, oil and grease, and chlorine (residual). A. ☐ yes B. ☐ no

I certify that I am familiar with the information contained in the application and that to the best of my knowledge and belief such information is true, complete, and accurate.

F. P. Weeber
Printed Name of Person Signing

Manufacturing Manager
Title

12/12/75
Date Application Signed

Signature of Applicant

18 U.S.C. Section 1001 provides that:

Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up by any trick, scheme, or device a material fact, or makes any false, fictitious, or fraudulent statements or representations; or makes or uses any false writing or document knowing same to contain any false, fictitious, or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than 5 years, or both.

PP

WATER QUALITY DIVISION
Permits and Regulations
P. O. Box 2348
Santa Fe, N. M. 87503

(505) 827-5121

December 23, 1975

Mr. E. F. Weaber
[illegible] Manager
[illegible] Industries
[illegible] Systems Division
P. O. Box 4365
Albuquerque, N. M. 87106

RE: NPDES Permit Application Short Form C, and Accompanying Check

Dear Mr. Weaber:

Please be advised that this office received a completed short form C and accompanying check in the amount of $10.00. The completed short form C and accompanying check made out to the U.S. EPA should be mailed to the U. S. EPA per the instructions included in my previous letter.

I have returned the application and your check for revision. Please note that the application should bear an original signature. I appreciate the inclusion in your letter of historical information concerning Gulton Industries wastewater disposal system. If I can be of any further assistance, please do not hesitate to call.

Sincerely,

Charles Wylander
Environmental Scientist II

CW:jm

Enclosure as stated

Form Approved
OMB No. 158-R0096

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
APPLICATION FOR PERMIT TO DISCHARGE - SHORT FORM C

FOR AGENCY USE
APPLICATION NUMBER: NM0022188
DATE RECEIVED: 76 01 02
YEAR MO. DAY

To be filed only by persons engaged in manufacturing and mining

Do not attempt to complete this form before reading accompanying instructions
Please print or type

1. Name, address, location, and telephone number of facility producing discharge
   A. Name Gulton Industries, Inc.
   B. Mailing address
      1. Street address 15000 Central SE
      2. City Albuquerque 3. State New Mexico
      4. County Bernalillo 5. ZIP 87123
   C. Location:
      1. Street same
      2. City 3. County
      4. State
   D. Telephone No. 505 299-7601
      Area Code

JAN 2
6AEF
$10.00
8030
Copies Furn...
State ...
CO...
...
...

2. SIC 3811
   (Leave blank)

3. Number of employees 230

If all your waste is discharged into a publicly owned waste treatment facility and to the best of your knowledge you are not required to obtain a discharge permit, proceed to item 4. Otherwise proceed directly to item 5.

4. If you meet the condition stated above, check here ☐ and supply the information asked for below. After completing these items, please complete the date, title, and signature blocks below and return this form to the proper reviewing office without completing the remainder of the form.
   A. Name of organization responsible for receiving waste
   B. Facility receiving waste:
      1. Name
      2. Street address
      3. City 4. County
      5. State 6. ZIP

5. ☒ Principal product, ☐ raw material (Check one) Military - Aero Space Instrumentation
6. Principal process Manufacture of Metal work, Printed Circuit Boards, and assembly of the above.
7. Maximum amount of principal product produced or raw material consumed per (Check one)

Basis	Amount 1-99 (1)	100-199 (2)	200-499 (3)	500-999 (4)	1000-4999 (5)	5000-9999 (6)	10,000-49,999 (7)	50,000 or more (8)
A. Day	X							
B. Month								
C. Year								

8. Maximum amount of principal product produced or raw material consumed, reported in item 7, above, is measured in (Check one):

A.☐ pounds B.☐ tons C.☐ barrels D.☐ bushels E.☒ square feet

F.☐ gallons G.☐ pieces or units H.☐ other, specify _____

9. (a) Check here if discharge occurs all year ☒, or

(b) Check the month(s) discharge occurs:

1.☐ January 2.☐ February 3.☐ March 4.☐ April 5.☐ May 6.☐ June

7.☐ July 8.☐ August 9.☐ September 10.☐ October 11.☐ November 12.☐ December

(c) Check how many days per week: 1.☐ 1 2.☐ 2-3 3.☒ 4-5 4.☐ 6-7

10. Types of waste water discharged to surface waters only (check as applicable)

Discharge per operating day	Flow, operating gallons per day					Volume treated before discharging (percent)				
	0.1-999 (1)	1000-4999 (2)	5000-9999 (3)	10,000-49,999 (4)	50,000- or more (5)	None (6)	0.1-29.9 (7)	30-64.9 (8)	65-94.9 (9)	95-100 (10)
A. Sanitary, daily average										
B. Cooling water, etc. daily average										
C. Process water, daily average	x									x
D. Maximum per operating day for total discharge (all types)	10									

11. If any of the three types of waste identified in item 9, either treated or untreated, are discharged to places other than surface waters, check below as applicable.

Waste water is discharged to:	Average flow, gallons per operating day				
	0.1-999 (1)	1000-4999 (2)	5000-9999 (3)	10,000-49,999 (4)	50,000 or more (5)
A. Municipal sewer system					
B. Underground well					
C. Septic tank					
D. Evaporation lagoon or pond	x				
E. Other, specify					

12. Number of separate discharge points: A.☒ 1 B.☐ 2-3 C.☐ 4-5 D.☐ 6 or more

13. Name of receiving water or waters Tijeras Arroyo

14. Does your discharge contain or is it possible for your discharge to contain one or more of the following substances added as a result of your operations, activities, or processes: ammonia, cyanide, aluminum, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc, phenols, oil and grease, and chlorine (residual). A.☐ yes B.☐ no

I certify that I am familiar with the information contained in the application and that to the best of my knowledge and belief such information is true, complete, and accurate.

H. P. Woober
Printed Name of Person Signing

Manufacturing Manager
Title

12/12/75
Date Application Signed

_____
Signature of Applicant

18 U.S.C. Section 1001 provides that:

Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up by any trick, scheme, or device a material fact, or makes any false, fictitious, or fraudulent statements or representations, or makes or uses any false writing or document knowing same to contain any false, fictitious, or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than 5 years, or both.

It is [illegible] that any modification to [illegible] subdivision construction within a 3 mile radius [illegible] of Albuquerque must be approved by the City Planning Commission for conformance with the master plan.

Yours truly,

John R. Knight, P.E., Chief
Water & Liquid Waste Section

JRKimlg

cc: Victor Bickel

Blind cc to: Richard Wilson
Ruben Ramirez
E.P. Bensch

Aug 25 1976

Gulton Industries Albuquerque

Mfg of metal work & printed
10 1 circuit boards for mil[illegible]
SIC 3811
accd to EPA

Mike Holderer of EPA Dallas
called & he is writing the
permit & wants ideas on [illegible]
is appropriate.
Our (NMEIA's) files make it
sound like they are an [illegible]
outfit, and our analyses
show they have been high
in Cd and Cr

1972 N.M. Directory of Mfg & Ind list
them as being SIC
3662 Radio & TV trans eq
3611 Elec Measuring Inst
3573 Electronic Comp. Eq.

Holderer will look up electroplating [illegible]
& see if they seem suitable. [illegible]
[illegible] I [illegible] [illegible]

Harry Becker, EPA Dallas 1/25/77

Harry Becker told Mr. Bachtel J.F. 505 243-
of General Elec., alb
to send in new standard form C

Phone conversation with Harry Becker, EPA Dallas, who called to let me know he is working on Fulton

Fulton Industries NM 28185
15,000 Central NE

printed circuit operation (electro
Say all harmful waste goes to sealed? lagoon, then
solidified to sanitary land fill.
Only discharge is running water after a lagoon
10 gal/hr to Tijeras arroyo

maybe
for
sealed

Use some proprietary chemicals
Possible problem with Cu 14.2 mg/l
Don't know about
other parameters
Many others too low
to detect.

CN .15 mg/l
Zn .2 mg/l
Cr .05

[illegible] pond [illegible] [illegible] – last checked one year ago – hypalon lining – appeared to be no leaks. [illegible] has been used in April for recycling of gold + copper. Occasionally, the liquid level is lowered by a commercial pumping outfit.

Golden Colorado – Bullion Management took sludge. toxic concentrated from etcher

---

rinse water lagoon hypalon lining – rinse water – not from etcher. Cleaned and pumped out lining intact. overflow pipe to arroyo 10 gal/h. flocculant added to pond to precipitate material. chemist checks it. pH 6.35

Samples completed noon 3/30/77

Permits Branch (6AEEP)

nickname
Harry
San Rocker 749 1983 EPA Dallas 3/21/77

Gulton mina permit NM0028185
electroplating of printed circuits
discharge to evaporation ponds sludge to
landfills rinse water to lagoon
discharge from the lagoon 10gal/hour
(240/day) Unloaded, maybe other heavy
print 15 earliest for guidelines on electro
printed circuits ~~Wilson did read~~
(Mr. Wacker Gulton) movement analysis, flow rates
verify. Cu 14 mg/l from mine ponds
Cr, Sn, Cyanide, Chromium, Zinc ph 6.0
Total suspended solids discharge to Tijeras
Arroyo impact on groundwater
mining in lagoon?
General Electric NM0000159 intech
hold permit not covering all parameters
of significance in effluent
Chrome, Zinc 001 is most significant
Mr Bechtel plant manager will be com-
ing in coming Wilson laboratories
does analysis Standard form "C"
San Jose Arterial is in city limits
domestic may go to Albuq. sewer
process, that waste coming out
from each point is lateral lined.

Gulton
pink
Staple Gulton
reports

EIA - Water Quality Division
Permits & Regulations Section
P. O. Box 2348
Santa Fe, NM 87503
(505) 827-5271

April 5, 1977

Mr. Harry Becker
U. S. Environmental Protection Agency
Region VI, 6AEEP
First International Building
1201 Elm Street
Dallas, TX 75270

RE: Gulton Industries, NM0028185, General Electric, NM0000159

Dear Mr. Becker:

Last week I visited the plant sites of Gulton Industries and General Electric, both of Albuquerque. Enclosed are copies of both reports, discussing the discharges that are to be covered by NPDES permit limitations. The General Electric plant appears to be the same as when Mr. Clifford Haggard, EPA, discussed the discharges with Mr. Baechtel of GE on June 10, 1976. Mr. Baechtel is in the process of submitting NPDES Standard Form C.

Sincerely,

Ann M. Young
Environmental Scientist II

AMY:jm

Enclosures

Gulton f

STATE OF NEW MEXICO

HEALTH and SOCIAL SERVICES department

April 5, 1977

Report of Visit to Gulton Industries

Gulton Industries NM0028185 Tijeras Canyon
15000 Central, S. E.
Albuquerque, NM 87123

Mr. Hank Weeber 299-7601

Ann Young visited the site on March 30, 1977

The upper lagoon is total retention; if the pond fills up, it is pumped by a commercial company. This lagoon contains the toxic materials from the etcher, and has a hypalon lining that appears to be in good condition. It was last checked one year ago, when it was totally pumped. The sludge was taken by Bullion Management, Golden, Colorado, for its extractable gold and copper.

The lower lagoon is on a lower terrace below the total retention lagoon, and also has a hypalon lining which appears to be in good condition. It also was checked for leaks and pumped out and cleaned. It contains rinse water, and flows when the plant is in operation; the discharge pipe is at the top of the impoundment, and the effluent flows down a tiny canyon to Tijeras arroyo. There were mosses and other plants growing in the soil wetted by the discharge. The estimated overflow is 10 gal/hour. A chemist is commissioned to check the quality of the effluent; he occasionally adds a flocculant.

While I was there, I checked the pH 6.35, and collected and preserved samples as requested by Sam Becker, EPA. The results have not been received yet from the State Laboratory, Albuquerque, where they were delivered that day.

Mr. Weeber mentioned that the city sewer is due to be extended out to the plant, perhaps by this coming summer, and Gulton may decide to discharge into that. Also mentioned was the idea of increasing the lagoons and adding a sprinkler to increase evaporation, and go to total retention.

ENVIRONMENTAL IMPROVEMENT AGENCY
Water Quality Division
P. O. Box 2348
Santa Fe, New Mexico 87503
(505) 827-5271, Ext. 333

March 6, 1978

Mr. Alfredo Armendariz
Production Engineer
Colton Industries
[illegible] Central S.E.
Albuquerque, NM 87123

Dear Mr. Armendariz,

Enclosed please find a copy of the Water Quality Control Commission regulations, as you requested. Please note Section 1-201 on p. 4, "Notice of Intent to Discharge", if the discharge is to anything other than a community sewer system. Part 3, starting on p. 14, addresses discharges onto or below the surface of the ground.

If you discharge to a watercourse, the application for a NPDES Permit, (National Pollutant Discharge Elimination System), NM0028185 should be modified in respect to the quantity, quality, and location of the discharge, and your new address. This can be done by writing to the US Environmental Protection Agency, Region VI, 1201 Elm Street, First International Building, Dallas, Texas 75270, Attn: Mr. Wayne Watkins, Permits and Support Branch. The phone number is Area Code 214-767-2765. It is recommended that such correspondence be sent Certified Mail. If Colton no longer will discharge to a watercourse, please request an affidavit of no discharge from the USEPA, and a request to cancel NM0028185.

Any discharge to the Albuquerque sewer system has to meet the industrial waste ordinance of the City of Albuquerque. Mr. Edmund G. Archuleta is the Chief, Liquid Waste System.

If I can be of any assistance, please call at 827-5271, Ext. 333.

Sincerely,

Ann M. Young,
Environmental Scientist,
Permits & Regulations Section

AMY:tpc

cc: USEPA, Permits Section
Edmund Archuleta, City of Albuquerque

cc: Mr. Ann M. Young

Carlton
Plus Industry file
General

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

RECEIVED
MAR 21 1978
WATER POLLUTION
CONTROL DIVISION

March 10, 1978

Mr. Alfredo Armendariz
Products Engineer
Carlton Industries
15000 Central SE
Albuquerque, N. M. 87123

Subject: Industrial Liquid Waste Ordinance

Dear Mr. Armendariz:

Per your recent request enclosed is a copy of the subject Ordinance No. 212-1972 and its amendment Ordinance No. 43-1975. With the recent completion of the Tijeras Canyon Interceptor Sewer Phase II which extended the sewer beyond Four Hills Road and terminated at the back of your property, we feel that you must now connect and thus discharge your wastewater into City sewer. For a number of years Carlton Industries has periodically inquired about the construction status of this interceptor link. The sewer construction had been held up for a number of years awaiting federal and state matching funds participation. The City decided about a year ago to finance this $1,200,000 plus sewer extension through capital revenue funds.

Late last Fall I spoke with George Friberg of your office at which time he indicated that your firm was seriously considering moving to a different site in the City. Nonetheless we made arrangements to send laboratory personnel to your factory and as a result, Mr. Emory Moore, Laboratory Supervisor, prepared a preliminary industrial waste survey. As a result of this survey, you are to construct a sampling and metering manhole as specified under Section 4 of the amended ordinance.

Plans for the collection system and manhole both at your existing site and at the proposed site location must be coordinated with and approved by the Engineering Division of this department. For this endeavor you should contact Mr. Mike Mendoza, Acting Chief Engineer, at 766-7354 or at his office on the 9th floor of the Western Bank Building. Should you have questions regarding the interpretation of the subject ordinance, you may contact Mr. Galen Reumpf, Assistant Liquid Waste Engineer-Treatment and Disposal, at 766-7535. His office is also in the Western Bank Building, 5th and Marquette NW.

We trust this satisfactorily answers questions you had and provides you with sufficient information to develop necessary pretreatment processes.

Sincerely,

Edmund G. Archuleta, P.E.
Chief, Liquid Waste Systems

EGA/hk

cc: Galen Roumpf
Mike Mendoza

State of New Mexico
HEALTH and SOCIAL SERVICES DEPARTMENT

MEMORANDUM

Date: 4-17-78

To: Gulton file

From: Ann Young

Subject: NPDES permit application

Mr. Alfredo Armendariz called Mr. Gene Rozacky [illegible] in Dallas, asking for permit to be issued. Permit can be written just for pH 6-9 and Cyanide, CN-A is Cyanide amiable to chlorination, and CN-Total. Max-- said permit should have a flow limit. Only the rinse water will be permitted - the etching water is total retention. If Rozacky uses the April 24 '75 guidlines which have been rescinded, the loading

HED 950A Form Revised 9/76

in pounds would be extremely small, as the regs are written for 10000 sqft/day and Gulton produces 25 sqft/day. Flow estimated at 10 gal/hr. No other alds would apply. Hope that they go to total retention. Jul 14, '78 has pretreatment guidelines for printed circuits; don't know how they compare with Albuquerque liquid waste ordinance.

Gene called back - will try to get in 200 gal/day maximum flow

- 6/6/78

I called Mr. Armendariz this afternoon - he didn't know the test procedure to use - I offered him to Gene Rozacky in Dallas as to which guidelines were used. Amy

---

Ed Archuleta - 4/14/78

Galton Industries - want to move to new site - after city has put up sewer right to their back door

Chant Corp will occupy old site, Galton ~~building~~ moving to new site near Rust Tractor Osuna Road Mone Mundy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1201 ELM STREET
DALLAS, TEXAS 75270

RECEIVED
SEP 11 1978
Construction Grants Administration

NPDES DETERMINATION

After considering the facts and the requirements and policies expressed in Public Law 95-217 and implementing regulations, I have determined that Permit No. NM0028185, Gulton Industries, be issued and effective as proposed in Public Notice dated May 20, 1978, subject to timely certification (or waiver thereof) by the state certifying agency, provided, however, that any condition(s) contested in a request for an Adjudicatory Hearing submitted within 10 days from receipt of this determination shall be stayed if the request for a Hearing is granted.

Dated: September 8, 1978

Howard G. Bergman
Director
Enforcement Division (6AE)

NOTICE: This permit includes minor revisions made in accordance with the Regional Administrator's determination. Please retain this permit as your official copy.

Permit No. NM0028185
Application No. NM0028185

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et. seq; the "Act"),

Gulton Industries, Inc.
15000 Central SE
Albuquerque, New Mexico 87123

is authorized to discharge from a facility located at

15000 Central SE
Albuquerque, New Mexico 87123

to receiving waters named

Tijeras Arroyo

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on October 8, 1978

This permit and the authorization to discharge shall expire at midnight, December 31, 1980

Signed this 21st day of August 1978

Howard G. Bergman
Director
Enforcement Division

A-1 EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning effective date and lasting through expiration date
the permittee is authorized to discharge from outfall(s) serial number(s) 001, rinse wastewater only

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations kg/day (lbs/day)		Other Units (Specify)		Monitoring Requirements Measurement Frequency	Sample Type
	Daily Avg	Daily Max	Daily Avg	Daily Max		
Flow-~~Daily~~ (MGD)	N/A	N/A	N/A	0.0002	2/month	Instantaneous
Cyanide, A	(0.000021)	(0.000041)	N/A	N/A	2/month	Grab
Cyanide, Total	(0.00021)	(0.00041)	N/A	N/A	2/month	Grab

*( )lbs/day

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per two months on a grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):
Outfall 001 at discharge from pond containing rinse wastewater.

B. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

None.

2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

C. MONITORING AND REPORTING

1. *Representative Sampling*

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. *Reporting*

Monitoring results obtained during the previous 3 months shall be summarized for each month and reported on a Discharge Monitoring Report Form (EPA No. 3320-1), postmarked no later than the 28th day of the month following the completed reporting period. The first report is due on January 28, 1979 . Duplicate signed copies of these, and all other reports required herein, shall be submitted to the Regional Administrator and the State at the following addresses:

Mr. Howard G. Bergman, Director
Environmental Protection Agency
First International Building
1201 Elm Street
Dallas, Texas 75270

Ms. Maxine Goad, Program Manager
Permit & Regulations Section
Water Quality Division
New Mexico Environmental
Improvement Agency
P. O. Box 968
Santa Fe, New Mexico 87503

3. Definitions

a. The "daily average" discharge means the total discharge by weight during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.

b. The "daily maximum" discharge means the total discharge by weight during any calendar day.

4. *Test Procedures*

Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304(g) of the Act, under which such procedures may be required.

5. *Recording of Results*

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The exact place, date, and time of sampling;

b. The dates the analyses were performed;

c. The person(s) who performed the analyses;

d. The analytical techniques or methods used; and

e. The results of all required analyses.

6. *Additional Monitoring by Permittee*

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report Form (EPA No. 3320-1). Such increased frequency shall also be indicated.

7. *Records Retention*

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the State water pollution control agency.

A. MANAGEMENT REQUIREMENTS

1. *Change in Discharge*

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new NPDES application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the permit issuing authority of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

2. *Noncompliance Notification*

If, for any reason, the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit, the permittee shall provide the Regional Administrator and the State with the following information, in writing, within five (5) days of becoming aware of such condition:

a. A description of the discharge and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

3. *Facilities Operation*

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

4. *Adverse Impact*

The permittee shall take all reasonable steps to minimize any adverse impact to navigable waters resulting from noncompliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

5. *Bypassing*

Any diversion from or bypass of facilities necessary to maintain compliance with the terms and conditions of this permit is prohibited, except (i) where unavoidable to prevent loss of life or severe property damage, or (ii) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the effluent limitations and prohibitions of this permit. The permittee shall promptly notify the Regional Administrator and the State in writing of each such diversion or bypass.

6. *Removed Substances*

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

7. *Power Failures*

In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either:

a. In accordance with the Schedule of Compliance contained in Part I, provide an alternative power source sufficient to operate the wastewater control facilities;

or, if such alternative power source is not in existence, and no date for its implementation appears in Part I,

b. Halt, reduce or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.

B. RESPONSIBILITIES

1. *Right of Entry*

The permittee shall allow the head of the State water pollution control agency, the Regional Administrator, and/or their authorized representatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and

b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any discharge of pollutants.

2. *Transfer of Ownership or Control*

In the event of any change in control or ownership of facilities from which the authorized discharges emanate, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Regional Administrator and the State water pollution control agency.

3. *Availability of Reports*

Except for data determined to be confidential under Section 308 of the Act, all reports prepared in accordance with the terms of this permit shall be available for public

inspection at the offices of the State water pollution control agency and the Regional Administrator. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Act.

4. *Permit Modification*

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

5. *Toxic Pollutants*

Notwithstanding Part II, B-4 above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

6. *Civil and Criminal Liability*

Except as provided in permit conditions on "Bypassing" (Part II, A-5) and "Power Failures" (Part II, A-7), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. *Oil and Hazardous Substance Liability*

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

8. *State Laws*

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

9. *Property Rights*

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

10. *Severability*

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

PART III

OTHER REQUIREMENTS

This permit may be modified, or, alternatively, revoked and reissued, to comply with any applicable effluent limitation issued pursuant to the order the United States District Court for the District of Columbia issued on June 8, 1976, in Natural Resources Defense Council, Inc. et. al. v. Russell E. Train, 8 ERC 2120 (D.D.C. 1976), if the effluent limitation so issued:

(1) is different in conditions or more stringent than any effluent limitation in the permit; or

(2) controls any pollutant not limited in the permit.

Data Systems Division
Gulton Industries Inc.

6600 Gulton Court, N.E.
P.O. Box 3027
Albuquerque, New Mexico 87190
505-345-9031
TWX 910-989-1669

gulton

July 3, 1979

Environmental Protection Agency
Permit Branch (6AEP Region 6)
First Int'l Bldg. 1201 Elm St.
Dallas, Texas 75270

Attention: Mr. Eugene Rozacky

Dear Sir,

Enclosed is the "Discharge Monitoring Report" for April, 1979. This report constitutes our last submittal in accordance with permit number NM0028185 since we have moved to a new facility in May, 1979 and no longer discharge to a water course but rather to our own waste treatment facility and ultimately to the community sewer system.

Thank you for your assistance in the recent months.

Very truly yours,

GULTON INDUSTRIES INC.
Data Systems Division

George J. Friberg
Vice President, Manufacturing

mg

cc: Ann M. Young
Len Torres
Pond File
Effluent Control File

ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87503
(505) 827-5271
Thomas E. Baca, M.P.H., Director

Bruce King
GOVERNOR

George S. Goldstein, Ph.D.
SECRETARY

Larry J. Gordon, M.S., M.P.H.
DEPUTY SECRETARY

September 23, 1980

Colton Industries
15000 Central S.E.
Albuquerque, New Mexico 87123

Re: Expiration of NPDES Permit NM0028185

Dear NPDES Permittee:

The above-referenced permit to discharge will expire soon. Enclosed for your convenience is a Consolidated Permits Program Application Form 2C, and an Application Form 1, General Information. You should complete these two application forms and submit them to the U.S. Environmental Protection Agency, Permits and Support Branch. The address is:

First International Building
1201 Elm Street
Dallas, Texas 75270

Please send a copy of the completed applications to this Division at the above address in Santa Fe.

It is very important that you update and complete the forms and submit them to the USEPA as soon as possible, since it will take considerable time to process the applications and reissue the permit. The reissuance has to be completed before your existing permit to discharge expires December 31, 1980.

If you have already re-applied for reissuance of your NPDES permit, please disregard this letter.

Should you need assistance in completing the permit application, please feel free to contact me at 827-5271 or the U.S. Environmental Protection Agency at (214) 767-2765.

Sincerely,

Ann M. Young

for Charles Nylander, Program Manager
Surface Water Section

Enclosure

cc: EID District Manager

MEMORANDUM

DATE: Oct 1, 1980

TO: Gulton File NM0028185

FROM: Ann Young

SUBJECT: George Fritsch, Vice President, Manufacturing, called today - said Gulton does not have a surface discharge. Pretreat, and send it to Albuq WWTP. I told him to request an affidavit of no discharge from Fed Woods, EPA, and fill it out, besides not applying for the permit

ADM 031-A Issued 6/78

follow up to:

Data Systems Division
Gulton Industries Inc.

6600 Gulton Court, N.E. 87109
P.O. Box 3027 87190
Albuquerque, New Mexico
505-345-9031
TWX 910-989-1669

gulton

RECEIVED
OCT 9 1980
EID: WATER
POLLUTION CONTROL

October 6, 1980

Environmental Protection Agency
Permit Branch (6AEP Region 6)
First Int'l Bldg. 1201 Elm St.
Dallas, Texas 75270

Attention: Mr. Fred Woods

On July 3, 1979 we advised EPA that we would not renew our NPDES Permit NM0020168 since we have relocated our plant to a new site which is equipped with its own treatment facility. The treated waters at the new site discharge into a publicly owned treatment works. The State of New Mexico Environmental Improvement Division (EID) suggests that we secure from EPA an "Affidavit of No Discharge" to close both EPA's and EID's files on this matter. Please send us such form so that we may comply.

Very truly yours,

GULTON INDUSTRIES, INC.
Data Systems Division

George J. Friberg
Vice President, Manufacturing

mg

cc: Ann M. Young/New Mexico EID
Len Torres/ DSD
Pond File
Effluent Control File

REFERENCE 6

NEW MEXICO HEALTH and SOCIAL SERVICES DEPARTMENT

CHEMICAL and PHYSICAL ANALYSES for WATER SAMPLES

Scientific Laboratory System

Date received: 3-31-77 | Lab No.: 2276 | SLS bar code No.:

CONSULT SLS Lab Manual for proper collection of sample ...

CHEMICAL ANALYSES: Check individual items for analysis (Mark appropriate box(es)) — INTERIM PRIMARY PARAMETER GROUP ☐1 ☐2 ☐3 — TYPE of CHEMICAL ANALYSIS ☐ Complete Secondary ☐ Organic ☐ Partial

Water Supply System name: | Water Supply System Code No.: | City or Location: | County: | Check one: ☐ TREATED WATER ☐ RAW WATER

Collection Date: 3/30/77 | Collection Time: | Collection Point: Gallup | Collector's remarks: | Report to: Ann Young, Pocnill & Rzz[illegible]

Collected By: Ann Young | Owner: | Address: EIA Santa Fe, NM

TYPE of SYSTEM (Check one) ☐ PRIVATE PUBLIC: ☐ Community ☐ Non-community

SOURCE: ☐ Spring ☐ Lake ☐ Well-Depth ☐ Drain ☐ Stream ☐ Pool ☐ Other (specify) | LAT. | LONG.

CATIONS	mg/l	ANIONS	mg/l	PARAMETER		PARAMETER	mg/l	PARAMETER	mg/l	PARAMETER	mg/l
00930 Sodium (as Na)		00940 Chloride (as Cl)		00900 Tot Hardness (as $CaCO_3$)	mg/l	38260 Foaming Agents (as Las)		01075 Silver		ORGANIC 39300 Endrin	
00935 Potassium (as K)		X 00950 Fluoride (as F)		00430 Alkalinity (as $CaCO_3$)	mg/l	01000 Arsenic		01145 Selenium		39732 Lindane	
00915 Calcium (as Ca)		X 00620 Nitrate (as N)		00515 Total Dissolved Solids	mg/l	01005 Barium		01090 Zinc		38270 Methoxychlor	
00925 Magnesium (as Mg)		00440 Bicarbonate (as HCO_3)		00095 Conductance Micromhos 25°C		01025 Cadmium		Uranium		39400 Toxaphene	
01045 Iron-Total (as Fe)		00445 Carbonate (as CO_3)		00400 pH		01030 Chromium		RADIOLOGICAL pCi/l Gross Alpha		39730 Chlorophenoxy 2,4-D	
01056 Manganese (as Mn)		00945 Sulfate (as SO_4)		01330 Odor		01043 Copper		Gross Beta			
X Cyanide	0.025			00080 Color		01049 Lead		Radium-226		Chlorophenoxy 2,4, and 5-TP Silvex	
				00070 Turbidity		07180 Mercury		Radium-228			

LABORATORY REMARKS:
Cyanide — base preserved
NO_3^- — H_2SO_4 preserved
F^- — non-preserved

Analyzed by: [illegible signature]
Date reported: 4/6/77

State of New Mexico
Environmental Improvement Agency
Laboratory
Albuquerque, New Mexico

CHEMICAL AND PHYSICAL ANALYSIS FOR WATER SAMPLES

Check individual items for analysis or appropriate square below:

- ☐ Routine Chemical Analysis
- ☐ Partial Chemical Analysis
- ☐ Complete Chemical Analysis
- ☐ Routine Heavy Metals

64272

Date Received: 12/10/75   Lab. No.: 1-[illegible]8

Collection Date: 11/25/75
Collected by: [illegible] Nylander
Owner: [illegible] Industries
Report to: E.I.A. Water Quality
Address: [illegible] of Keys
P.O. Box 2348
Santa Fe, New Mexico
Other Information:

City or Location: Albuquerque   County: Bernalillo   Elev.

Untreated ☐ Treated ☐

Source: ☐ Well Depth: ____ ☐ Spring ☐ Drain ☑ Stream ☐ Lake ☑ Other ☐ Pool

Collection Point: overflow from lagoon

River Basin: ☑ Rio Grande ☐ Gila ☐ Canadian ☐ Little Colorado ☐ Pecos ☐ Other ☐ San Juan

WATER SUPPLIES: ☐ MUNICIPAL ☐ MDWCA ☐ PRIVATE ☐ INDUSTRIAL ☐ COMMERCIAL ☐ RECREATIONAL

Lat. ___ Long. ___

RECEIVED
MAY 14 1976
WATER SUPPLY REGULATION SECTION

Cations	mg/l	me/l	Anions	mg/l	me/l	Parameter	mg/l	Parameter	mg/l	Parameter	mg/l	Parameter	mg/l
00930 Sodium (as Na)			00940 Chloride (as Cl)			00900 Total Hardness (as $CaCO_3$)		00353 Chlorine demand mg/l		☒ 01030 chromium	2.35	☒ 01145 selenium	<0.01
00935 Potassium (as K)			00950 Fluoride (as F)			00410 Alkalinity (as $CaCO_3$)		00080 color		☒ 01040 copper	2.58	☒ 01090 zinc	<0.035
00916 Calcium (as Ca)			71850 Nitrate (as NO_3)			00515 Total Dissolved Residue		00070 turbidity		00720 cyanide		09501 radium 226	pc/l
00925 Magnesium (as Mg)			00440 Bicarbonate (as HCO_3)			32005 Carbon chloroform extract		00095 Conductance Micromhos 25°C		☒ 01049 lead	0.08	13501 strontium 90	
01045 Iron - Total (as Fe)			00445 Carbonate (as CO_3)			00010 Field water temperature		☒ 01000 Arsenic	0.02	07100 mercury		03501 gross beta	
01055 Manganese (as Mn)			00945 Sulfate (as SO_4)			38260 Surfactants (as LAS)		01005 barium		01002 molybdenum			
			00650 Phosphate (as PO_4)			00400 pH		01022 boron		01067 nickel			
Total			Total			01330 odor		☒ 01025 cadmium	<0.01	01075 silver			

Remarks: Preserved with 5 ml HNC3

Date: 5/11/76
Analyst: [illegible]
Reviewed by: [illegible]
Date Reported: 5/12/76

The following Laboratory Analysis Report Forms were transcribed by Susan Morris on July, 5, 1990, from NMEID/ Surface Water Bureau mircofilm files.

Public Health Laboratory

New Mexico Health and Social Services Department
3015 Terrace Avenue N. E., Albuquerque, New Mexico 87106
CHEMICAL AND PHYSICAL ANALYSIS FOR WATER SAMPLES

631

Check Items for Analysis: Fulton

Date Received: Lab. No.

Collection Date: 24Feb71

City or LOCATION: Albuquerque

County: Bernalillo

Collected by: Gray

Station:

Owner:

Source: ☐ Well ☐ Spring ☐ Stream ☐ Sewer ☐ Drain ☐ Lake ☐ Pool

Depth:

Report to:

Address:

River Basin: ☐ Rio Grande ☐ Gila ☐ Canadian ☐ Little Colorado ☐ Pecos ☐ Other ☐ San Juan

WATER SUPPLIES: ☐ MUNICIPAL ☐ MDWCA ☐ PRIVATE ☐ INDUSTRIAL ☐ COMMERCIAL

WASTE WATERS: ☐ MUNICIPAL ☐ MDWCA ☐ PRIVATE ☐ INDUSTRIAL ☐ COMMERCIAL

Other Information: Effluent

Lat. ° Long. °

Cations	mg/l	me/l	Anions	mg/l	me/l	Physical and Chemical Parameters	mg/l	Other Parameters		Other Parameters		Other Parameters Not Listed	mg/l
X Sodium (as Na)	103.5		X Chloride (as Cl)	201.0		Total Hardness (as CaCO)		X Surfactants (as LAS)	0.6	X pH		X Ca	0.7
☐ Potassium (as K)			X Fluoride (as F)	65		Alkalinity (as CaCO)		X BOD-5 day 20°C mg/l	35	Water Temperature °C		X S. = SO4	2200
☐ Calcium (as Ca)			Nitrate (as NO)			Dissolved Residue		X COD mg/l	90	Color Units		X Cd	0.16
☐ Magnesium (as Mg)			Bicarbonate (as HCO)			Suspended Residue		Chlorine demand mg/l		Turbidity Jackson Units Supernatant		X Ni	<0.5
X Iron - Total (as Fe)	1.4		Carbonate (as CO)			Total Residue		Dissolved Oxygen mg/l		Turbidity Jackson Units Total		X Pb	<0.02
☐ Manganese (as Mn)			X Sulfate (as SO)	2200		Total Fixed Solids		Oxygen Saturation Concentration		X Settleable Solids ml/l		X Sn	<2
☐			X Phosphate (as PO)	<.05		Total Volatile Solids		X Conductance Micromhos 25°C	1700	Odor Nature		X Pd	*
Total			Total							Zn #	mg/l 0.33	Cr +6	0.15

Remarks: * unable to run Pd at this time

Date:

Analyst:

Reviewed by:

Form 27(Rev. 4/1/68) Replaces Rev. 9/7/

Check Items for Analysis

Gulton

New Mexico Health and Social Services Department
[illegible] Laboratory
3011 Indian Avenue N.E. Albuquerque, New Mexico 87106
CHEMICAL AND PHYSICAL ANALYSIS OF WATER SAMPLES

Date Received

632
Lab. No.

Collection Date 24Feb71

CITY OR LOCATION Albuquerque

County Bernalillo

Elev

Collected by Gray

Station

Owner

Report to

Address

Source: [X] Well [ ] Spring [ ] Stream [ ] Sewer [ ] Drain [ ] Lake [ ] Pool

Depth

River Basin: [X] Rio Grande [ ] Canadian [ ] Pecos [ ] San Juan [ ] Gila [ ] Little Colorado [ ] Other

WATER SUPPLIES: [ ] MUNICIPAL [ ] MDWCA [ ] PRIVATE [X] INDUSTRIAL [ ] COMMERCIAL

WASTE WATERS: [ ] MUNICIPAL [ ] MDWCA [ ] PRIVATE [ ] INDUSTRIAL [ ] COMMERCIAL

Other Information: Water Supply

Lat ° ' " Long ° ' "

Cations	mg/l	me/l	Anions	mg/l	me/l	Physical and Chemical Parameters	mg/l	Other Parameters		Other Parameters		Other Parameters Not Listed	
[X] Sodium (as Na)	465		[X] Chloride (as Cl)	490		Total Hardness (as CaCO)		[X] Surfactants (as LAS)	0.05	[X] pH	7.6	[X] CU	.04
Potassium (as K)			[X] Fluoride (as F)	2.20		Alkalinity (as CaCO)		BOD 5 day 20°C mg/l		Water Temperature °C		[X] $S=SO_4$	1.0
Calcium (as Ca)			Nitrate (as NO)			Dissolved Residue		COD mg/l		Color Units		[X] Cd	<0.01
Magnesium (as Mg)			Bicarbonate (as HCO)			Suspended Residue		Chlorine demand mg/l		Turbidity Jackson Units Supernatant		[X] Ni	<0.5
[X] Iron Total (as Fe)	0.08		Carbonate (as CO)			Total Residue		Dissolved Oxygen mg/l		Turbidity Jackson Units Total		[X] Pb	<0.02
Manganese (as Mn)			[X] Sulfate (as SO_4)	1.0		Total Fixed Solids		Oxygen Saturation Concentration		Settleable Solids ml/l		[X] Sn	<2
			[X] Phosphate (as PO)	0.1		Total Volatile Solids		[X] Conductance Micromhos 25°C	1550	Odor Nature		[X] Pd	*
Total			total						ZN	mg/l 0.18		+6 Cr	<.01

Remarks: *Unable to RUN Pd at this time

Date: 4-2-71

Analyst:

Reviewed by:

Date Reported:

4/1/65 Replaces Rev. 9/24/66 which is obsolete

Public Health Laboratory

New Mexico Health and Social Services Department
305 Terrace Avenue N. E., Albuquerque, New Mexico 87106
CHEMICAL AND PHYSICAL ANALYSIS FOR WATER SAMPLES

Check Items for Analysis: Gulton

Date Received: 633 Lab No.

Collection Date: 24Feb71
Collected by: Gray
Owner: Gulton
Report to: J.R. Wright
Address: H&SS
Santa Fe
Other Information: Sediment

CITY OR LOCATION: Albuquerque County: Bernalillo Elev

Station

Source: ☐ Well ☐ Spring ☐ Stream ☐ Sewer ☐ Drain ☐ Lake ☐ Pool Depth

River Basin: ☐ Rio Grande ☐ Canadian ☐ Pecos ☐ San Juan ☐ Gila ☐ Little Colorado ☐ Other

WATER SUPPLIES: ☐ MUNICIPAL ☐ MDWCA ☐ PRIVATE ☐ INDUSTRIAL ☐ COMMERCIAL

WASTE WATERS: ☐ MUNICIPAL ☐ MDWCA ☐ PRIVATE ☐ INDUSTRIAL ☐ COMMERCIAL

Lat. ° Long °

Cations	mg/l	me/l	Anions	mg/l	me/l	Physical and Chemical Parameters	mg/l	Other Parameters		Other Parameters		Other Parameters Not Listed	mg/g soil
X Sodium (as Na)	14.9		X Chloride (as Cl)	22.0		Total Hardness (as CaCO)		X Surfactants (as LAS)	≠	X pH		X Cu*	0.1
Potassium (as K)			X Fluoride (as F)	≠		Alkalinity (as CaCO)		BOD 5 day 20°C mg/l		Water Temperature °C		X S=SO4 ≠	
Calcium (as Ca)			Nitrate (as NO)			Dissolved Residue		COD mg/l		Color Units		X Cd *	.01
Magnesium (as Mg)			Bicarbonate (as HCO)			Suspended Residue		Chlorine demand mg/l		Turbidity Jackson Units Supernatant		X Ni *	0.5
X Iron - Total (as Fe)	≠		Carbonate (as CO)			Total Residue		Dissolved Oxygen mg/l		Turbidity Jackson Units Total		X Pb *	0.1
Manganese (as Mn)			X Sulfate (as SO)	35.0		Total Fixed Solids		Oxygen Saturation Concentration		Settleable Solids ml/l		X Sn *	2
			X Phosphate (as PO)	<0.5		Total Volatile Solids		X Conductance Micromhos 25°C	≠	Odor Nature		X Pd*	**
Total			Total										

Remarks: * Values alone were obtained when dirt samples were extracted with water
Values below obtained when sample was extracted with 2% HNO_3 (mg/g soil)
Cu - 960.0 Ni - 12.5
Pb - 5.0 Sn - 20.0
Cd - 4.0 ≠ Not really valid Analysis
** unable to run Pd at this time

Date:
Analyst: (R. Meyenheim)

Check Items for Analysis

Gulton

New Mexico Health and Social Services Department
305 Terrace Avenue N.E. Albuquerque, New Mexico 87106
CHEMICAL AND PHYSICAL ANALYSIS FOR WATER SAMPLES

Date Received

634
Lab No.

Collection Date 24Feb 71

City or Location Albuquerque

County Bernalillo

Elev.

Collected by Gray

Owner Gulton

Report to J.R. Wright

Address

Station

Source ☐ Well ☐ Spring ☐ Stream ☐ Sewer ☐ Drain ☐ Lake ☐ Pool

Depth

River Basin
☒ Rio Grande ☐ Gila ☐ Canadian ☐ Little Colorado ☐ Pecos ☐ Other ☐ San Juan

WATER SUPPLIES
☐ MUNICIPAL ☐ MDWCA ☐ PRIVATE ☐ INDUSTRIAL ☐ COMMERCIAL

WASTE WATERS
☐ MUNICIPAL ☐ MDWCA ☐ PRIVATE ☐ INDUSTRIAL ☐ COMMERCIAL

Other Information Influent

Lat ° Long °

Cations	mg/l	mg/l	Anions	mg/l	mg/l	Physical and Chemical Parameters	mg/l	Other Parameters		Other Parameters		Other Parameters Not Listed mg/l	
☒ Sodium (as Na)			☒ Chloride (as Cl)			Total Hardness (as CaCO)		☒ Surfactants (as LAS)	1.0	pH		☒ Cu	.55
Potassium (as K)			☒ Fluoride (as F)			Alkalinity (as CaCO)		BOD 5 day 20 C mg/l		Water Temperature °C		☒ SO4=	
Calcium (as Ca)			Nitrate (as NO)			Dissolved Residue		☒ COD mg/l	110.0	Color Units		☒ Cd	<0.02
Magnesium (as Mg)			Bicarbonate (as HCO)			Suspended Residue		Chlorine Demand mg/l		Total Color Units Platinum Cobalt		☒ Vi	<0.05
☒ Iron Total (as Fe)	2.04		Carbonate (as CO)			Total Residue		Dissolved Oxygen mg/l		Turbidity Jackson Units Total		☒ Pb	
Manganese (as Mn)			☒ Sulfate (as SO)	210		Total Fixed Solids		Oxygen Saturation Concentration		Settleable Solids ml/l		☒ Sn	<
			☒ Phosphate (as PO)	.05		Total Volatile Solids		☒ Conductance Micromhos 25°C	1200	Odor Nature		☒ Pd	*
Total			Total	.05						Zn	0.19	Cr^{+6}	<.01

Remarks * unable to run Pd at this time

Date

Analyst

Check Items for Analysis

Gulton

Gulton

Public Health Laboratory

New Mexico Health and Social Services Department
305 Terrace Avenue N. E., Albuquerque, New Mexico 87106
CHEMICAL AND PHYSICAL ANALYSIS FOR WATER SAMPLES

24Feb71 — 635
Date Received — Lab. No.

Collection Date 24Feb 71 71
Collected by Gray
Owner Gulton
Report to J.R. Wright
Address H&SS
Santa Fe
Other Information Grab on effluent

City or Location _____ County _____ Elev _____

Station _____

Source: ☐ Well ☐ Spring ☐ Stream ☒ Sewer — Depth _____ — ☐ Drain ☐ Lake ☐ Pool

River Basin: ☒ Rio Grande ☐ Gila ☐ Canadian ☐ Little Colorado ☐ Pecos ☐ Other ☐ San Juan

WATER SUPPLIES: ☐ MUNICIPAL ☐ MDWCA ☐ PRIVATE ☐ INDUSTRIAL ☐ COMMERCIAL

WASTE WATERS: ☐ MUNICIPAL ☐ MDWCA ☐ PRIVATE ☒ INDUSTRIAL ☐ COMMERCIAL

Lat ° ' " — Long ° ' "

Cations	mg/l	me/l	Anions	mg/l	me/l	Physical and Chemical Parameters	mg/l	Other Parameters		Other Parameters		Other Parameters Not Listed	
Sodium (as Na)			Chloride (as Cl)			Total Hardness (as CaCO)		Surfactants (as LAS)		pH		X Aldehydes	
Potassium (as K)			Fluoride (as F)			Alkalinity (as CaCO)		BOD 5 day 20°C mg/l		Water Temperature °C			
Calcium (as Ca)			Nitrate (as NO)			Dissolved Residue		COD mg/l		Color Units			
Magnesium (as Mg)			Bicarbonate (as HCO)			Suspended Residue		Chlorine demand mg/l		Turbidity Jackson Units Supernatant			
Iron - Total (as Fe)			Carbonate (as CO)			Total Residue		Dissolved Oxygen mg/l		Turbidity Jackson Units Total			
Manganese (as Mn)			Sulfate (as SO)			Total Fixed Solids		Oxygen Saturation Concentration		Settleable Solids ml/l			
			Phosphate (as PO)			Total Volatile Solids		Conductance Micromhos 25°C		Odor Nature			
Total			Total										

Remarks: Aldehydes can not be tested

Date: _____
Analyst: PM
Reviewed by: R. Weyertheim
Date Reported: _____

REFERENCE 7

COMP BOOK

Gulton Industries
15000 Central Ave.
NBQ - PA

81

DENNISON NATIONAL COMPANY
Made in USA Holyoke, Massachusetts 01041

(1)

11:00 am met Mr. George Chant 7-10-90
Dale Doremus, Susan Morris
– at the 14800 Central Ave. SE.
Mr. Chant walked with us over the property a
We saw first the area where explosives were tested.
In the hill slope are 3 barrels imbedded into the slope.
Mr. Chant removed the Neighboring building when
he became aware that people were living in it.

11:10 · We walked toward the North to the building on
the property-we observed that the liners of the lagoons
were still in place - piping from the lagoons to the Arroyo
appears to have been removed though pieces remain.
Up by the building and to the west - southern end there
appears to have been a drainage area. We will check
the soil pH in this area

11:20 we walked down the drainage way to the intersection
of the arroyo of Tijeras canyon, looping back around
until we came to the eastern edge of Mr. CHANT's
property and walked up back to the vehicles.
Mr. Chant then left us to continue our field work.

12:00 - Began photographing sit and measing. SAM 7/11/90

Frame 8-9 – Looking North at explosive boom chambers
Dale Doremus in foreground

Frame 10 looking northeast at interior of
one boom chamber

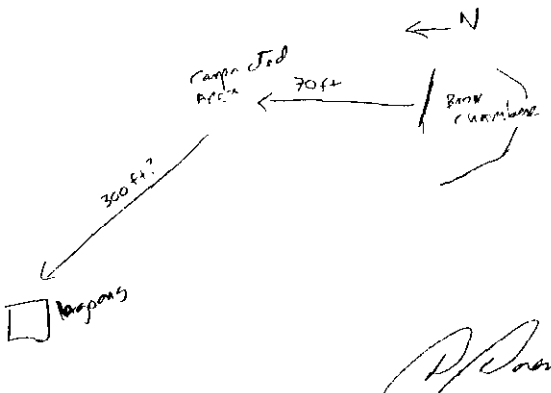
Soil pH 5-pH 1 - 8 Boom Chambers
Dale Doremus 7-10-90

7-10-90
SpH-2 taken above Boom Chamber #1

Boom Chamber #1 - two pipes rise from the top of the chamber and vent at the ground surface -

diameter 2.8 ft interior
length 4.3 ft interior

Boom Chamber 2 and 3, (east)
Interior diameter 1.8 ft
Interior length 2.7 ft.



D Morin 7-10-90

7-10-90

Frame 11 S. Morin lifting liner of waste treatment pond 1 looking north Note stained soils

Frame 12 S. Morin taking field soil pH SpH3 from northernmost, highest pond. Notice corner of liner. Building in background was former circuit board plating shop.

Overflow from this pond appears to be along southern margin
SpH-3 = 8 taken from southwest corner of pond
North treatment pond is 99.5 ft x ≈ 27 feet

SpH4 - 8 taken from middle of north pond

SpH 5 ranged from <4.0 to 6.0 Taken from overflow area from the north pond on the southern margin of the site.
A little margin of the yellowish area red stained
the surface soil is 4.5 pH
A sample 1 ft below surface is < 4.0
Green stained area is 6.0

Frame 13 S. Morin at southern waste treatment pond, looking south.

Frame 14 S. Morin at south pond close-up
Note pond liner

D Morin 7-10-90

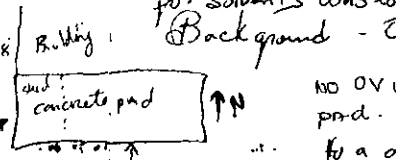
4 7-10-90

SpH 6 = 8 taken from southwest margin of pond liner

SpH 7 = 8 taken from drainage from southwest corner of southern pond

SpH 8 = 8 taken immediately south + downhill of southern pond

OVA at 7 locations outside old Gulton plating facility where "flash pan" for solvents was located. Background - 0



NO OV were detected and concrete pad. Holes were made with a Post Auger to a depth of 6-18". 8 samples sites were sampled. There Appeared to be some sort of industrial (concrete?) material in spots at a depth of ~6".

Around SW corner of the Shed there was noticeable bright green residue about the foundation. Soil off from SW corner of building

SpH 9 = 8 ~ soil sample included some green rock or stained fragments ~ sample from 2" below surface

SpH 10 = 5 to 4.5 soil sample from 4" below surface deeper sample from 2" below surface had pH of 6.0

Dale M. Dorma 7-10-90

SPM 7-10-90

5 7-10-90

Frame 15 - S. Morris collecting soil sample from SE corner of building

Samples taken from drainage SW of building

SpH 11 = 7 2.5 ft west of building down drainage. Sample taken from bright green staining

SpH 12 = 4.5 Red soils 45 ft west of building down small drainage. Sample taken 1" below surface. Cobbles and pebbles with bright green coating

SpH 13 = 8.0 Background sample 2.5 meters SW corner of building. Surface Sample. Sample from middle of building

Frame 16 looking west down small side drainage from west side of building SpH 12 location

Septic Tank Location

Frame 17 - Old septic tank location south of building.

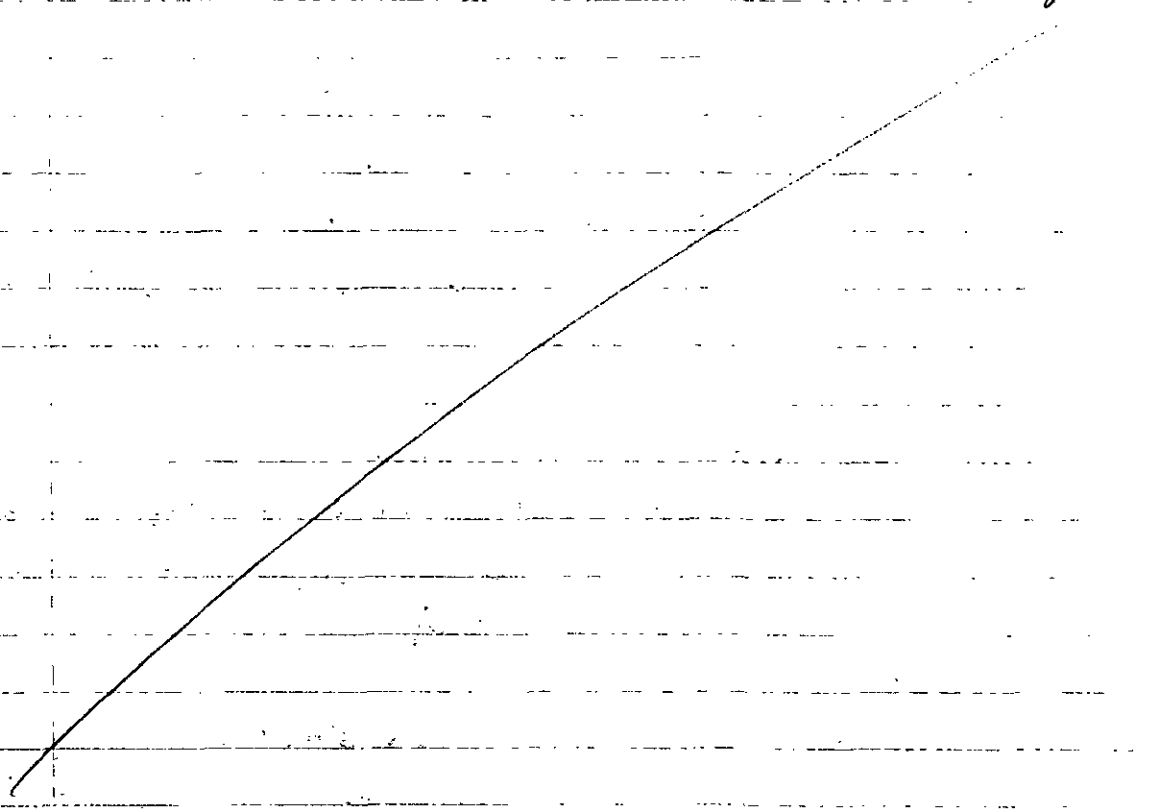
Frame 18 - D. Dorma SpH: 14 location

Dale M. Dorma 7-10-90

6. 7-10-90

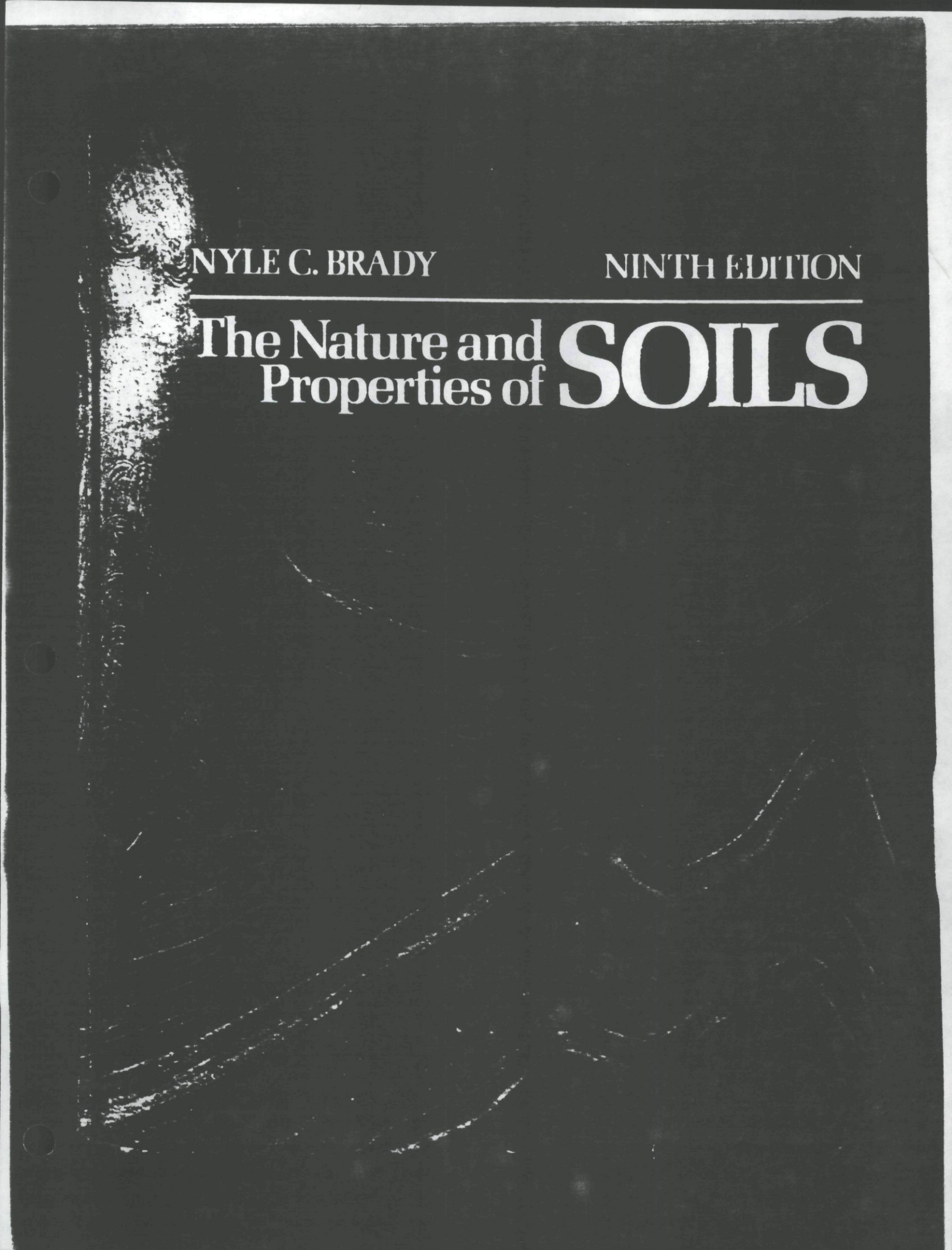
Spt 14 - Surface soil 8.0
Spt 15 = 4.5 Yellowish red soils with fibrous material (wood)

Spt 16 - 7.0 Sample from reddish soil along side arroyo to main E-W arroyo



Dale M. Doremus 7-10-90

REFERENCE 8



NYLE C. BRADY

NINTH EDITION

The Nature and Properties of SOILS

not uncommon. In soils of regions of low rainfall the blocky type in the subsoil may be replaced by a columnar or prismatic arrangement.

Soil Structure Classes. The peds in each structural type and subtype are further classified according to their size into soil structure *classes* as follows: (a) very fine or very thin, (b) fine or thin, (c) medium, (d) coarse or thick, and (e) very coarse or very thick. While the exact dimension for each class varies from one type or subtype to another, the class designation assures accurate description of the nature of the soil structural units.

Soil Structure Grades. Soil structure *grades* relate to the degree of interaggregate adhesion and to aggregate stability. Four grades are recognized.

1. *Structureless.* Particles not arranged into peds or aggregates. If separates are not bound together (not coherent), as in a coarse sand, the term *single grain* is used. If they are tightly bound (coherent), as in a very compact subsoil or in a puddled surface soil, *massive* is used.
2. *Weak.* Poorly formed peds or aggregates barely observable in place.
3. *Moderate.* Well-formed and moderately durable peds that are not very distinct in undisturbed soil.
4. *Strong.* Durable peds that are quite evident in undisturbed soil and become separated when the soil is disturbed.

Genesis of Soil Structure. The mechanics of structure formation is exceedingly complicated and rather obscure. The nature and origin of the parent material play significant roles, as do the physical and biochemical processes of soil formation. Climate is also a prime consideration. Soluble salts influence the development of structural units, particularly in the soils of arid regions. In more humid areas the downward migration of clay, iron oxides, and lime is a factor. Undoubtedly, the accumulation of organic matter and its type of decay are significant, too, especially in the development of the crumb structure so common in the surface soils of grasslands. The need to preserve and encourage this particular structural type is becoming critical in cultivated lands.

2.7 Particle Density of Mineral Soils

One means of expressing soil weight is in terms of the density of the solid particles making up the soil. It is usually defined as the mass (or weight) of a unit volume of soil *solids* and is called *particle density* (D_p). In the metric system, particle density is usually expressed in terms of megagrams per cubic meter (Mg/m^3). Thus, if 1 m^3 of soil solids weighs 2.6 Mg, the particle density is 2.6 Mg/m^3.[1]

[1] Since 1 Mg = 1 million grams and 1 m^3 = 1 million cubic centimeters, this particle density can also be expressed as 2.6 g/cm^3.

Although considerable range may be observed in the density of the individual soil minerals, the figures for most mineral soils usually vary between the narrow limits of 2.60 and 2.75 Mg/m^3. This occurs because quartz, feldspar, and the colloidal silicates with densities within this range usually make up the major portion of mineral soils. When unusual amounts of minerals with high particle density such as magnetite, garnet, epidote, zircon, tourmaline, and hornblende are present, the particle density may exceed 2.75 Mg/m^3. It should be emphasized that *the size of the particles of a given mineral and the arrangement of the soil solids have nothing to do with the particle density. Particle density depends on the chemical composition and crystal structure* of the mineral particle.

Organic matter weighs much less than an equal volume of mineral solids, having a particle density of 1.1–1.4 Mg/m^3. Consequently, the amount of this constituent in a soil markedly affects the particle density. This accounts for the fact that mineral surface soils (which almost always have higher organic matter content than the subsoils) usually possess lower particle densities than do subsoils. Some mineral topsoils high in organic matter (say, 15–20%) may have particle densities as low as 2.4 Mg/m^3, or even below. Nevertheless, *for general calculations, the average arable mineral surface soil* (3–5% organic matter) may be considered to have a particle density of about 2.65 Mg/m^3.

2.8 Bulk Density of Mineral Soils

Bulk Density. A second important weight measurement of soils is *bulk density* (D_b). It is defined as the mass (weight) of a unit volume of dry soil. This volume includes *both solids and pores*. The comparative calculations of bulk density and particle density are shown in Figure 2.8. A careful study of this figure should make clear the distinction between these two methods of expressing soil weight.

Factors Affecting Bulk Density. Unlike particle density, which is a characteristic of solid particles only, bulk density is determined by the volume of pore spaces as well as soil solids. Thus, soils with a high proportion of pore space to solids have lower bulk densities than those that are more compact and have less pore space. Fine-textured surface soils such as silt loams, clays, *and clay loams generally have lower bulk densities than sandy soils.* The solid particles of the fine-textured soils tend to be organized in porous grains or granules, especially if adequate organic matter is present. This condition assures high total pore space and a low bulk density. In sandy soils, however, organic matter contents are generally low, the solid particles lie quite closely together, and the bulk densities are commonly higher than in the finer-textured soils.

REFERENCE 9

The purpose of this memorandum is to summarize the findings of the Division's investigation of this site and to document the need to declare that an emergency condition exists so that contractual drilling services can be employed. To date, the Division has researched historical aerial photographs and land-use records, interviewed persons who have been involved with various enterprises at the site and conducted extensive sampling of private water wells in the area.

3/15/88
Draft

SITE DESCRIPTION

The site is located in Sections 29.1 and 30.2, Township 10 N, Range 5 E, N.M.P.M. on the northern side of Tijeras Creek (Figure 1). Land ownership is divided among several private parties with U.S. Highway 66 traversing the center.

Domestic and industrial water supply is provided by private water wells. Public water supplies are not available in this area. A minimum of 32 houses are located within ½ mile of the site in the westerly and hydraulically down-gradient direction. Assuming an average of 4 persons per household, then approximately 128 persons live in this area and are served by private well water.

The site has a complex history of industrial land use dating back to at least the late 1950's. Potential contaminant sources include:

a) an abandoned landfill;

b) an abandoned gas station (evidence that two underground tanks were used);

c) an abandoned used auto parts "junkyard";

d) a privately owned munitions manufacturing plant; and

e) an abandoned water well that could have been used for waste disposal (i.e. injection).

The earliest evidence of ground-water contamination was discovered in an inspection by the Division's Solid Waste Section (Bell and Westen, 1985). They reported that an abandoned well located at the site was contaminated with gasoline or diesel. Followup investigations in 1987 confirmed that this well was heavily contaminated with leaded gasoline and to a lesser extent with explosives or explosives decomposition byproducts. Benzene,for example, was detected at a concentration approximately 100 times in excess of the N.M. Water Quality Control Commission's standard. Additionally, two private water wells were found to be contaminated with MTBE, an unleaded gasoline additive, and with solvents respectively. The former well is only slightly contaminated and is still used for domestic and industrial supply; the latter well is heavily contaminated and cannot be used for domestic purposes. Water-quality data for these wells are listed in Tables 1-3 respectively.

Hydrogeology

Ground water occurs within the alluvium of Tijeras Creek and within the underlying fractured Precambrian bedrock. The general directions of ground-water flow are from the mountain slopes towards the Creek and then westwards down the valley (Figure).

Average particle velocity estimates have been made for several potentially affected stratigraphic units. The equations

$$V = Ki/n$$
$$T = Kb$$

were used where

b = saturated (or penetrated) thickness
i = hydraulic gradient
K = hydraulic conductivity
n = effective porosity
T = transmissivity
V = average particle velocity

The hydraulic gradient (i) of Tijeras Creek at the site is approximately 40'/2000' = 0.02 (USGS 7.5' topographic map, Tijeras, NM quadrangle). Hydraulic water-table gradients range from approximately 100'/5000' = 0.02 for a westward flowpath along the axis of Tijeras Creek to # for a southward flow path from the mountain slope above and through the northern edge of the site towards Tijeras Creek (Titus, 1980, Plate). Clearly,

$$i = 0.02$$

is reasonable assumption for the westward flow of ground water from the site to potentially affected residential areas.

Hydraulic conductivities (K) will vary among potentially affected lithologic units. In general, bedrock and fine-grained alluvial units should have lower K values than coarser-grained alluvial units. The magnitude of K values can only be estimated based upon available data.

Several aquifer performance tests were conducted on wells in the Montecello Subdivision located approximately one mile northwest of the site (AGWC, 1982). The wells tested are lcoated in a tributary canyon of Tijeras Creek, and are completed in what AGWC described as, "granite wash soils." It is not known whether the soil conditions in this area are similar to the site. Using transmissivity (T) values obtained from the tests and the screened well intervals, K values can be calculated.

$T = Kb \qquad K = T/b$

Wells-Davis well

$$K = \frac{2485 \text{ gpd/ft}}{10 \text{ ft}} = 248.5 \text{ gpd/ft}^2 \times \text{ft}^3/7.48 \text{ gal} = 33.2 \text{ ft/day}$$

Varan well

$$K = \frac{1433 \text{ gpd/ft}}{60 \text{ ft}} = 23.9 \text{ gpd/ft}^2 \times \text{ft}^3/7.48 \text{ gal} = 3.2 \text{ ft/day}$$

Effective porosity values for the area are not available. Using the values listed in Freeze and Cherry (198), a reasonable assumption would be 30% or n = 0.3.

Average particle velocity for the Wells-Davis well is

$V = Ki/n = (33.2 \text{ ft/day} \times 0.02)/0.3 = 2.2133 \text{ ft/day} \times 365 \text{ days/yr} = 808 \text{ ft/yr}.$

There is no reason to assume that this is a worst-case calculation. As noted above, this well is located in a tributary canyon rather than along Tijeras Creek itself. Using the K values of Freeze and Cherry (198) for the most coarse-grained materials exposed in the alluvium of Tijeras Creek, a worst-case assumption would be K = 150 ft/day. The corresponding ground-water flow velocity would be

$V = Ki/n = (150 \text{ ft/day} \times 0.02)/0.3 = 10 \text{ ft/day} \times 365 \text{ days/yr} = 3650 \text{ ft/yr}.$

SUMMARY

Three wells are known to be contaminated, two are contaminated so severely that they cannot be used for domestic purposes including showering and washing dishes.

At least 32 houses (approximately 128 persons) are located within ½ mile in the hydraulic down-gradient direction. All such houses are served by private water wells. Assuming an average particle velocity of 808 ft/yr, the travel time for ½ mile would be approximately 3.3 years.

REFERENCE 10

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GROUNDWATER

Prentice-Hall, Inc.
Englewood Cliffs, New Jersey 07632

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Table 2.2 Range of Values of Hydraulic Conductivity and Permeability

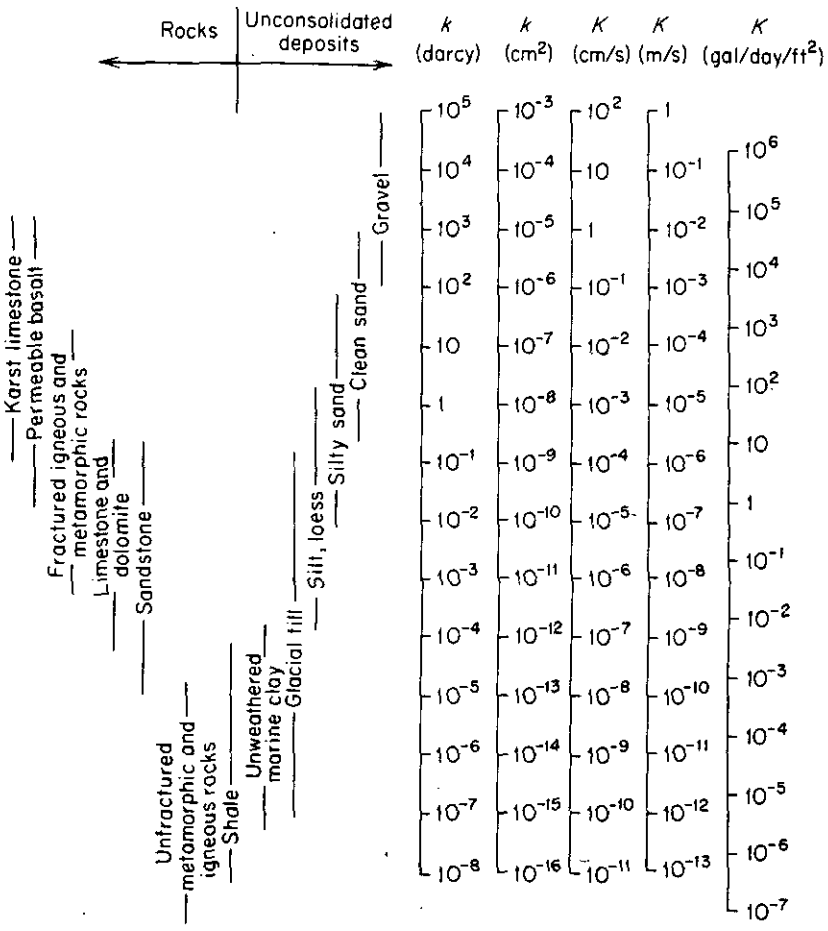


Table 2.3 Conversion Factors for Permeability and Hydraulic Conductivity Units

	Permeability, k*			Hydraulic conductivity, K		
	cm^2	ft^2	darcy	m/s	ft/s	U.S. gal/day/ft^2
cm^2	1	1.08×10^{-3}	1.01×10^{8}	9.80×10^{2}	3.22×10^{3}	1.85×10^{9}
ft^2	9.29×10^{2}	1	9.42×10^{10}	9.11×10^{5}	2.99×10^{6}	1.71×10^{12}
darcy	9.87×10^{-9}	1.06×10^{-11}	1	9.66×10^{-6}	3.17×10^{-5}	1.82×10^{1}
m/s	1.02×10^{-3}	1.10×10^{-6}	1.04×10^{5}	1	3.28	2.12×10^{6}
ft/s	3.11×10^{-4}	3.35×10^{-7}	3.15×10^{4}	3.05×10^{-1}	1	6.46×10^{5}
U.S. gal/day/ft^2	5.42×10^{-10}	5.83×10^{-13}	5.49×10^{-2}	4.72×10^{-7}	1.55×10^{-6}	1

*To obtain k in ft^2, multiply k in cm^2 by 1.08×10^{-3}.

REFERENCE 11

Hydrologic Report 5

New Mexico Bureau of Mines & Mineral Resources

A DIVISION OF
NEW MEXICO INSTITUTE OF MINING & TECHNOLOGY

Ground water in the Sandia and northern Manzano Mountains, New Mexico

by Frank B. Titus

Prepared in cooperation with the United States Geological Survey and the Office of the New Mexico State Engineer

SOCORRO 1980

General geology and hydrology of mountain area

The Sandia and northern Manzano Mountains form approximately the northern two-thirds of a great mountain block that has been uplifted and tilted eastward. The uplift is along a major fault system buried west of the west foot of the range (Kelley and Read, 1961, p. 18; Reiche, 1949, p. 1203). The uplift exposed Precambrian rocks in the Sandias that have been dated at more than 1.3 b.y. (billion years), about the same age as similar rocks in the bottom of the Grand Canyon (Fitzsimmons, 1961). The Precambrian rocks form nearly all of the imposing west face of the mountains that appears reddish tan from a distance.

Before uplift and exposure, the Precambrian rocks had been covered by at least 11,000 ft of sedimentary rocks of later geologic periods. Most of the sedimentary rocks have been eroded, but remnants are present on parts of the east slope and at the north end of the Sandias (fig. 4, geologic map, in pocket). One of the older sedimentary formations, the Madera Limestone, crops out and forms the present land surface over most of the eastern area of the mountains. Along the crest of the ridge as viewed from the west, the Madera Limestone forms a stratified cap overlying the unstratified Precambrian rock.

The Sandia Mountains are separated topographically from the northern Manzano Mountains by Tijeras Canyon and are separated structurally by a major northeast-aligned fault system formed by the Tijeras and Gutierrez faults. These two faults come together in a structurally complex area west of the village of Tijeras. Northeast from their junction they are subparallel, bounding a 1.5-mi- to 2.5-mi-wide slice that is downdropped at the southwest end and uplifted at the northeast. In the downdropped wedge the rocks have been folded into the Tijeras anticline (upfold) and the Tijeras syncline (downfold).

Northeast from the axis of the Tijeras syncline to Monte Largo, the entire stratigraphic section, from the Mesaverde Group (Cretaceous) to the crystalline Precambrian rock, crops out. The entire stratigraphic section also crops out at the north end of the Sandias, where complex downfaulting terminates the range.

Southwest and west of Placitas, faulted Paleozoic and Mesozoic strata dip northward and are buried to the north by the Rio Grande valley fill of the Santa Fe Group. In the north-central part of the Sandia Mountains, Precambrian rocks and the Sandia Formation have been faulted up in blocks and exposed by erosion of the Madera Limestone (Pennsylvanian), whereas low on the north backslope of the Sandias patches of the Abo Formation (Permian) still overlie the Madera Limestone.

The Sandia Mountains differ both structurally and topographically from the northern Manzano Mountains. The Sandias, with their higher crest altitude, have relatively steep eastern slopes. They have been intensely faulted, and the strata dip eastward at angles averaging 15-20 degrees. The lower northern Manzano Mountains, in contrast, are capped by strata that dip eastward at angles averaging only 3-4 degrees. Faults near the crest of the Manzanos are aligned generally north-south, parallel to the crest. Lower on the eastern backslope of the Manzanos, the faults tend to be aligned northeast-southwest, approximately parallel to the Tijeras-Gutierrez fault system. The faults have strongly affected the erosional development of drainage off the mountains as exhibited by the valley-and-ridge topography having a prominent northeast-southwest grain.

Over most of the Manzano backslope, valleys follow the fault traces—mainly because erosion can progress more rapidly in the broken rock along faults than across unshattered, resistant limestone ledges. However, the broad valley extending northeastward from sec. 23, T. 8 N., R. 7 E. may have been created directly by faulting that uplifted a block of Madera Limestone to form its east wall. This faulting probably occurred during an early part of the valley-filling stage of the Estancia Valley to the east. Block faulting directly molded present topography of the 6-mi-long north-trending valley containing the community of Barton (sec. 13, T. 10 N., R. 6 E.). This structural valley, here named the *Barton trough,* lies directly across, and intercepts, the eastward drainage off the Manzano Mountains. Barton trough was formed by uplift on the east of a barrier ridge of Madera Limestone.

The *Edgewood embayment,* named here for the small community on its south side (in sec. 27, T. 10 N., R. 7 E.), is a 10-mi-wide semicircular indentation into the lower east slopes of the mountains. The embayment is bounded on the south and west by the curved edge of the Madera outcrops, and on the north by outcrops of the Abo Formation around South Mountain. The valley fill of the Estancia Valley at the head of the embayment extends to the Gutierrez fault. The valley fill is 80 ft thick at well 11N.6E.24.212, 1 mi southwest of the Abo outcrop at the end of South Mountain. East-southeast, toward the open end of the embayment, the formation thickens to an estimated 300 ft and continues to thicken into the axis of the Estancia Valley.

Red beds of the Abo Formation crop out in an apron around much of South Mountain, but these strata dip toward the center of the mountain rather than toward the surrounding lowlands where the Abo lies beneath the valley fill (Kelley, 1963). Whether a bounding fault occurs around the south end of South Mountain is uncertain but estimates of exposed thickness of Abo made solely from Kelley's (1963) map do not require a fault. A bounding fault is postulated at the northeast end of South Mountain. In this area the Glorieta Sandstone crops out; red beds (presumably Abo) have been reported in drill cuttings from well 11N.7E.2.222b.

The approximate locations of subsurface contacts between the Madera Limestone and the Abo Formation and between the Abo and Yeso Formations are shown on the geologic map. The subsurface locations of the Paleozoic formations are based on: drillers' or owners' reports of limestone (Madera) or red beds (Abo) in wells drilled through the valley fill and the locations of gentle, closed topographic depressions a few acres to 10 acres in size resulting from solution of the buried Madera Lime-

stone accompanied by collapse of the overlying alluvium. The most noticeable of the collapse depressions are in NW¼ sec. 3, T. 10 N., R. 7 E., and in NE¼ and SW¼ sec. 33, T. 11 N., R. 7 E. The depressions are similar to numerous others in the Estancia Valley described by Titus (1969). Positions of the subsurface contacts shown on fig. 3 are modified somewhat from those shown in Titus (1969, fig. 4).

Rock units and their water-bearing properties

In the following discussion the rock units found in the mountain area are considered individually, starting with the oldest (Precambrian) and progressing to the youngest (Quaternary alluvium mantling the floors of present stream channels). The descriptions of lithology (rock type and character) and stratigraphy (relations of strata to each other) are based on the work of V. C. Kelley (1963) and fieldwork for this and other reports.

Stratigraphic thicknesses are measured at right angles to the bedding planes; therefore, where beds are inclined, the thickness penetrated by drilling a vertical hole will be greater than reported stratigraphic thicknesses. Also where a single rock unit crops out, some of its upper part has usually been removed by erosion. The outcrop thickness will be less than indicated in stratigraphic tables. Beneath an outcropping rock unit all older units present in the local geologic column generally may be found. The alluvial and valley-filling units and the terrace and landslide units rest on old surfaces because some of the intermediate geologic column has been removed by erosion.

Much of the information supporting the detailed aquifer descriptions is included in the appendix at the back of this report (table 1, wells; table 2, springs; and table 3, chemical analyses). A summary of the rock units is contained in fig. 4.

The chemical character of ground water (ions dissolved in the water) is related mainly to the minerals that make up the rock through which the water has moved. In passing through rock the water slowly dissolves minerals; water that has been underground a long time will usually contain more dissolved ions than water that has been in aquifers for only a geologically short time. (Ground water in the mountain area tends to be of the latter type.) The amount of dissolved ions in ground water depends more on solubility of the minerals than on length of time in an aquifer.

The reader is referred for information on drinking-water standards to a publication of the U.S. Environmental Protection Agency (1976) and for an exhaustive review of water-quality criteria to McKee and Wolf (1963).

Precambrian (p€)

Precambrian rocks are the basement rocks on which geologically younger strata were deposited. Prior to burial, the basement rocks were planed off by erosion to a gently rolling land surface. They include sedimentary rocks that were contorted and highly metamorphosed to schist, greenstone, gneiss, and quartzite in very early geologic time and were then intruded by granites. Most Precambrian rocks crop out in the west face of the Sandia and Manzano Mountains and in the higher parts of Monte Largo. Smaller outcrops are also found on the middle and upper east slopes of the Sandias, bounded by faults.

For practical purposes the Precambrian rocks have no intergranular porosity, specific yield, or permeability. *Porosity* is the ratio of the volume of void spaces to the total volume. *Specific yield* is the ratio of the volume of water that will drain from a volume of rock to the volume of that rock; it differs from porosity in that many pore spaces are not interconnected and therefore will not provide water to a well and in that the very narrowest openings (capillary size) will not drain at all, even though they do constitute part of the porosity. *Permeability* is a measure of the ease with which fluid can flow through the interconnected voids.

Faulting and jointing have created locally permeable zones through which small amounts of water can move. A number of small springs and seeps are found on the west face of the mountains, in lower Tijeras Canyon, and usually in the floors of arroyos. Eleven springs (table 2) associated with Precambrian rocks were visited during fieldwork for this report, but E. R. Caprio (1960) describes 22 in the Sandias alone. In the study area spring discharges are usually less than 10 gal/min, although Seven Springs (10N.5E.21.412) in Tijeras Canyon was estimated at 20 gal/min. Discharge, especially from small springs, is variable seasonally; during periods of drought, these springs are commonly dry.

A few wells (table 1) have been drilled into the Precambrian rocks, mostly in the lower part of Tijeras Canyon. The wells are all 90 ft or more in depth; one (10N.4E.36.124) reaches 500 ft. Most produce water from both Precambrian rocks and alluvium. The maximum yield reported, from the deepest well, is 16 gal/min; but simply drilling to greater depth holds little assurance of increasing the yield of wells in this unit. Although there is no record of dry holes being drilled, the prospects of obtaining a useful quantity of water from Precambrian rocks at most locations appear to be small.

Selected ion concentrations from three water samples from Precambrian rocks are plotted on a Piper diagram in fig. 5. The diagram is a way of illustrating percentages of the cations and percentages of the anions for each sample on two small triangles and then projecting the two points for a sample into the field of a parallelogram. The plotted points for a number of samples commonly form a grouping that is distinctive for water

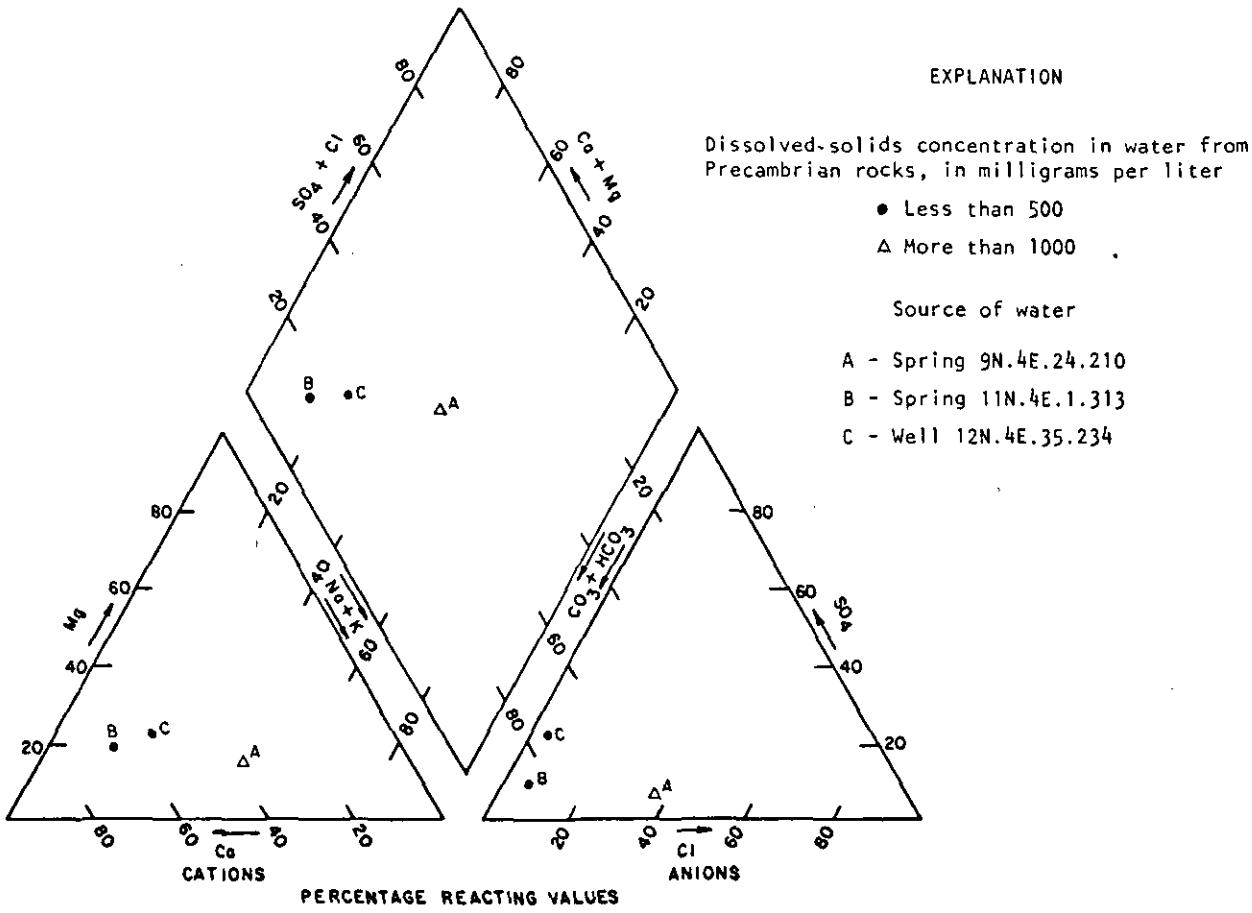


FIGURE 5—PIPER DIAGRAM SHOWING PROPORTIONS OF MAJOR CATIONS AND ANIONS IN WATER FROM PRECAMBRIAN ROCKS.

from a single source (Piper, 1953). Water from spring 9N.4E.24.210 (point A, fig. 5) falls somewhat outside the general field for water from Precambrian rocks, if the other two samples are representative of water from Precambrian rocks. Caprio (1960) ran more than 20 chemical analyses on water from Precambrian rocks. His work supports the conclusion reached in this study that water available from Precambrian rocks is likely to be chemically acceptable for domestic use (table 3).

Sandia Formation (Ps)

The Sandia Formation (Early and Middle Pennsylvanian) consists of interbedded black shale, dark-gray limestone, and gray to light-olive-gray and brownish sandstone. Locally the sandstone may be conglomeratic, especially near the base; carbonaceous streaks are found locally. East of Placitas the unit as mapped locally includes up to 90 ft of dark-gray or dusky-yellowish-green limestone and gray to locally red shale of older (Mississippian and Devonian?) strata in its basal part. Total thickness of the unit ranges from 10 to 230 ft (Kelley, 1963; Reiche, 1949). The Sandia Formation and associated rocks were deposited on the erosional surface of the Precambrian, and they crop out wherever the top of the Precambrian is exposed.

Only a few springs discharge from the Sandia Formation, but several yield water from the Sandia and overlying Madera. Most discharges are 20-40 gal/min, but Carlito Spring (10N.5E.15.331) on the north wall of Tijeras Canyon was estimated to discharge more than 250 gal/min from the Sandia and Madera. On the basis of spring discharges, limestone of the Sandia Formation appears to have rather high permeability from fractures and cavernous zones; the sandstones, moderate permeability.

Three water samples from the combined Sandia-Madera were chemically analyzed. These analyses indicate that water in the Sandia is probably similar to that in the overlying Madera. The chemistry of two samples from the Sandia and Madera together are plotted on a Piper diagram (fig. 6).

Madera Limestone (Pm)

The Madera Limestone (Middle and Late Pennsylvanian) is conventionally divided into a lower gray limestone member and an upper arkosic limestone member. The two members are not separated on the geologic map. The lower member consists of massive, cliff-forming beds of cherty gray limestone with minor interbedded gray and black shale and calcareous siltstone. The upper member, in contrast, is more than half siltstone, sandstone, and shale. It consists of alternating light-gray cherty limestone; arkosic calcarenite, red or brown arkosic sandstone, and gray shale. (For stratigraphic details see Myers, 1966, 1969; Myers and McKay, 1970, 1971; Read and others, 1944; Anon-

Ground-water availability and quality by area

In the discussions of specific areas that follow, information about ground-water occurrence, availability, and quality are summarized. In some cases additional information is presented, for example on dry holes in the Madera Limestone. Each area comprises a terrane in which a particular formation or sequence of formations crops out. The limits of each area treated in the following pages are shown on fig. 20. The geologic significance of the areas can be seen on the geologic map. The precipitous Precambrian terrane on the west faces of the mountains, the upland areas of Monte Largo and South Mountain, and the mountainous terrane southeast to northeast of Placitas are not considered here.

Lower Tijeras Canyon (Precambrian)

This area is that part of Tijeras Canyon cut in Precambrian rock. Its upper end is the narrow section of the canyon 1 mi west of the village of Tijeras; its lower end, the mouth of the canyon. Alluvium underlies the floor and the lower side slopes of the canyon to maximum depths that exceed 100 ft. Where major tributary canyons enter, the alluvium can be as much as 100 ft thick ½ mi away from the axis of Tijeras Canyon.

Both the alluvium and Precambrian rocks serve as aquifers. Although the more productive wells derive at least part of their water from the alluvium, the Precambrian rocks have sufficient fracture permeability, where tested, to provide some water. Wells have been drilled along the canyon floor and into the alluvial-fan material of tributary valleys and are mostly 25-150 ft deep. One well high on the south side of the canyon (10N.4E.36.124) was drilled to 500 ft in Precambrian rock. The driller reported no additional water was obtained below 240 ft. Water levels in wells range from a few feet for those near the stream in Tijeras Canyon to about 70 ft in the 500-ft well. Yields from the wells were all reported to be adequate; the maximum yield reportedly exceeds 50 gal/min. The deep well produces about 15 gal/min.

Water from the deep well (10N.4E.36.124) differs chemically from all other water in the canyon. It contains 1,140 mg/L dissolved solids of which 280 mg/L are sulfate and 3.5 mg/L are fluoride. Most of the water produced by this well is from Precambrian rocks; about 30 ft of saturated alluvium overlies the Precambrian rocks.

For other water sampled in this area the average dissolved-solids concentration (five samples) is 462 mg/L with average sulfate (seven samples) and fluoride (two samples) concentrations of 110 mg/L and 0.2 mg/L respectively. Concentrations used in computing these averages are from water samples taken from wells and springs in Precambrian rocks, alluvium, or both aquifers.

The chemical quality of ground water is good, except for one critical constituent—nitrate. Seven of the 21 samples analyzed for nitrate contained between 45 and 108 mg/L of the ion, 14 contained 0.0-4.4 mg/L. Water from the deep well contained no measurable nitrate. Nitrate concentrations in water from 18 wells and springs are above 5 mg/L, considered normal or background for the mountain region.

Middle Tijeras Canyon (Abo and Yeso)

This area extends from the narrow section of the Tijeras Canyon west of the village of Tijeras northeastward for about 6 mi (fig. 20). The northeastern limit is in a tributary canyon about a mile beyond where the main canyon (and the highway) turns east. Along most of this reach, the area is bounded on the northwest by the Gutierrez fault. Along the Gutierrez fault, where adjacent to the Tijeras syncline, a narrow outcrop band of the Glorieta Sandstone and San Andres Limestone and a very thin section of the lowermost part of the Santa Rosa Sandstone (not shown on the geologic map) are included in the terrane. Thus, in addition to the floor and sloping sides of Tijeras Canyon, the areas include the ridge between Tijeras and Gutierrez Canyons and the southeast side of Gutierrez Canyon.

The sandstone beds in the Abo and Yeso Formations yield ground water to wells in most parts of the area. Well depths in the Abo range from about 70 to 240 ft, and water levels range from 30 to 145 ft. The deeper water levels are found higher on the slopes above the floor of the canyon. Wells in the Yeso between Tijeras and Gutierrez Canyons are deeper, as much as 310 ft, and water levels may be as much as 250 ft below land surface.

Generally, well yields reported are adequate for domestic use. In the part of the canyon that lies within about 1 mi of the village of Tijeras, yields of 18-40 gal/min were reported. The closely spaced faults here indicate that former geologic stresses probably fractured the sandstone beds to a greater degree than elsewhere.

The few chemical analyses of water from the area indicate no potability problem, but water users should be concerned with the possibility of unusual nitrate concentration in ground water. No unusual nitrate concentrations were apparent in samples that were analyzed for this study. Wells very near faults that separate this terrane from the Mancos and Mesaverde terrane could, with long-term pumping, create cones of depression that induce ground-water flow across the fault to the wells, thereby drawing in water high in sulfate.

Tijeras anticline and syncline (Jurassic, Mancos, and Mesaverde)

The area is bounded on the southeast by the Gutierrez fault, on the west by the Tijeras fault and the contact between Triassic and Jurassic rocks south of San Antonito. The north end of the area is bounded by Frost Arroyo. The lower reaches of Arroyo San Antonio, followed by NM-14, are included in the area (fig. 20). The 2-mi-wide block between the Tijeras and Gutierrez faults has been compressed into two large folds, an anticline well exposed north of Tijeras Canyon and a syncline. Other smaller anticlines and synclines are found in

tions. About 1¾ mi southeast of Edgewood on US-66 a well owner reported that his water (well 10N.7E.35.231) was noticeably softer than that from nearby wells. This location is in the general direction of ground-water flow from the Barton trough. Whether fluoride from a source in the trough could remain in solution for a 4-mi flow through a limestone aquifer, with its surplus of calcium, is questionable. Chemical data to provide the answers are not available in the intervening distance. A second location is near the village of Tijeras, where one of the 1,100-ft wells of the Ideal Cement Co. in the Madera produces water containing 2.2 mg/L of fluoride. The third location is at the village of Tajique, where a village well (6N.6E.14.113) no longer in use produced water in 1951 containing 3.2 mg/L of fluoride. Another well now used as a community supply by the village has been reported by the New Mexico Department of Public Health (1967) to yield water containing 0.25 mg/L of fluoride.

Nitrates and contamination by sewage

Excessive nitrate in drinking water can cause methemoglobinemia in infants, a condition in which the blood is insufficiently oxygenated, indicated by a bluish skin coloration. The condition is serious and occasionally fatal. Nitrate poisoning appears to be confined to infants during their first few months of life; adults drinking the same water are not affected but breast-fed infants of mothers drinking such water may be poisoned (U.S. Public Health Service, 1962, p. 47-48). The U.S. Environmental Protection Agency (1976) recommends the limit that should not be exceeded as 10 mg/L nitrate as nitrogen (about 45 mg/L of the nitrate ion).

Nitrates are the end product of aerobic stabilization of organic nitrogen, and as such they occur in polluted waters that have undergone self-purification or aerobic treatment process (California State Water Pollution Control Board, 1952, p. 300). Nitrates in water at and near the land surface are taken up as fertilizer by biological activity, but at depth they tend to persist in solution and travel with the ground water. However, George and Hastings (1951) in a study in Texas reported that high nitrate concentrations were generally found in wells 200 ft deep or less. The study also found that nitrate concentrations were higher in updip areas and generally lower in downdip areas. Durum (in Berry, 1952) found that water from wells in parts of Kansas less than 200 ft deep generally contained higher nitrate concentrations than water from deeper wells.

Some sources for nitrate in ground water other than sewage effluent include leaching of nitrate fertilizer from the soil zone and decomposition of animal excrement. Small amounts are derived from nitrogen taken into solution directly from the air and from decomposition of organic matter in soils. Feth (1966) reviewed reports concerned with the occurrence of nitrates. He found the literature reported many possible geologic sources of nitrates. Some of these geologic sources include nitrate deposits (cave, caliche, playa) sheltered from leaching, organic-rich shale, and carbonate rocks.

The amount of nitrate in water samples from the mountain region ranged from 0.0 to 108 mg/L. The concentrations and numbers of well and spring sources in which nitrates are found are shown in the following tabulations:

0.0- 1.0 mg/L	32	wells and springs
1.1- 2.0	7	
2.1- 3.0	8	
3.1- 4.0	3	
4.1- 5.0	1	
5.1- 6.0	2	
6.1- 7.0	6	
7.1- 8.0	2	
8.1- 9.0	3	
9.1- 10.0	0	
10 -108	22	
	86	total analyzed for nitrate

These data suggest that the upper limit of background concentrations for this ion in the region, that is, the concentration that can be expected to result from nitrogen dissolved from the air and nitrate dissolved by water passing through soils, is about 5 mg/L. The locations of sample sites that produced water containing more than 5 mg/L are shown on fig. 22.

Nitrate concentrations greater than about 10 mg/L may indicate pollution. Behnke and Haskell (1968) report nitrate concentrations exceeded 35 mg/L beneath a subdivision at Fresno, California using individual septic-tank disposal; beneath a nearby sewage disposal plant the nitrate concentration exceeded 50 mg/L. Nightingale (1970) showed that beneath the entire Fresno area nitrate concentrations increased by 46 percent between the 1950-55 period and the 1962-67 period, as more septic tanks were installed. However, as subdivisions were converted to community sewer systems in the latter 5-year period, the rate of increase of nitrate concentration lessened.

Sewage effluent discharging from a septic tank or sewage line into the soil zone and percolating downward toward the zone of saturation carries particulate matter with bacteria and virus organisms. During percolation through the unsaturated zone and during flow through the aquifer, the particulate matter will be more or less filtered out depending on the size of pore spaces and distance through which the water moves. Flow through open fractures or through solution channels may transmit suspended material for thousands of feet. In contrast, at the Santee project near San Diego, California, coarse gravel was found to effectively filter out both bacteria and viruses in less than 200 ft. In another study made near Richmond, California, the maximum distance required in a sandstone for total filtration was less than 100 ft (McGauhey, 1968, p. 11). The effluent from a septic tank might easily contaminate a person's own well or the well of a near neighbor downgradient, but one disposal system is not likely to contaminate large areas. The situation is obviously different in localities where there are many, closely spaced disposal systems and wells.

Chemical analyses from the lower reach of Tijeras Canyon show that nitrate concentrations in ground water in this area reach a maximum of at least 108 mg/L; even higher concentrations are reported. This area is the only one in the region where concentrations

exceed the Environmental Protection Agency recommendations. Here the nitrate concentrations reach unhealthful amounts without considering the biological pollution that might be implied. Two of the wells (10N.4E.25.431 and 10N.5E.30.324) having the lower concentrations were very near the channel of Tijeras Arroyo. The third well (10N.5E.30.334) is in a south tributary to the canyon and is topographically higher than all other wells and dwellings in the tributary canyon.

Possible effects of water and sewer systems

Before man moved to the mountains in large numbers an equilibrium existed among the factors of recharge, ground-water flow, and discharge. The system was in steady state with each part balanced against the others. Whatever local or regional changes occurred in the level of the potentiometric surface were mainly the result of natural fluctuations of rain and snowfall. The arrival of a relatively large human population is thought not to have changed the steady state of the system as applicable to the general configuration of the potentiometric surface. While water has been pumped out of the aquifers, nearly all of it has been returned to the system through nearby individual sewage facilities. Net depletion is attributed to evaporation or to transpiration by the few irrigated plants but depletion by man is probably insignificant. Increased population is probably adversely affecting the quality of the water.

In some localities the capacity of the aquifers and the unsaturated zone to filter particulate material, including micro-organisms, probably will not be exceeded even for fairly closely spaced wells and disposal facilities. The Permian and Triassic terrane, with its thick shale layers and clay soils may be in this category.

If man is responsible for the nitrate problem in the lower reach of Tijeras Canyon, such problems will become more intense and more common; actions will have to be taken to solve them. Some alternative actions that will permit the population to remain are: collect and treat, or export the sewage through a centralized sewage system; provide uncontaminated water through a centralized water system; recycle the available water using centralized systems; or require purification of all water that is produced by each individual well. The intention here is to mention briefly some of the effects accompanying centralized systems.

Construction of a sewer collection and treatment system would immediately stop the injection of microorganisms and chemically degraded water at each domestic site, thereby halting the increase in both biological and chemical degradation of the aquifers. Stopping the contamination by not returning the effluent water to the aquifer system near where it was removed would result in lowering the water levels in wells as pumping from the aquifers continued. In time the construction of any sewer system would create additional reason for a parallel water-delivery system.

If an extensive water-distribution system is contemplated, the system may need to be planned around a water-importation scheme because of the small yields characterizing the mountain aquifers. The hydrology of these aquifers will nowhere allow the construction of the 1,000 gal/min wells that are economical. If water were imported, distributed to consumers, and then disposed of through the present individual septic tanks, the inevitable result would be a rise in the water levels in wells in the affected area. Of course this recharged water would contain all the biological and chemical load that the present septic tanks discharge to the aquifers. In some parts of the region, for example the Permian and Triassic terrane where the population density is high and the top of the saturated zone shallow, the increased recharge may locally raise the top of the saturated zone to land surface. This would thus cause the discharge of possible contaminated water through newly created seeps and springs. Only the parallel construction of a sewer system would prevent this undesirable effect.

The region seems well suited to construction of a combination water-distribution and sewage-treatment system with advanced purification and recycling of the water. Particularly relevant is the very low consumption of water in the region. Once the combined system is in operation, the amount of water needed to be continually added to the recycling system would be small. In fact it might be so small that the water could be pumped from some of the mountain aquifers, thereby eliminating the need for water importation. In view of both the great expense of installing pipes and pumping water from outside the area, not to mention the legal problems of obtaining water rights and permission to export water from either the Rio Grande or the Estancia Underground Water Basins, this alternative becomes important.

REFERENCE 12

STATE OF NEW MEXICO
HEALTH ENVIRONMENT

RECORD OF TELEPHONE CONVERSATION

~~Date~~ Time: Aug 2, 1990	~~Time~~ Date: 10:45
Originating Party: S. Morris NMEID/Superfund	Other Parties: Doug Earp City of Albuquerque 763-2600

Subject: Monitoring wells in Tijeras Canyon.

Discussion: Mr. Earp said:

1) That They, The City of Albuquerque, have a monitoring well at the point where the Tijeras Creek surface flow is lost to the alluvial fill of the Basin Region. At this point Tijeras Canyon becomes Tijeras Arroyo.

2) The well is 300 ft deep and the water level appears to fluctuate between 50 to 60 ft below the surface

3) Mr. Earp indicated that they do have some ~~analytical~~ analytical results from well samples but that aromatic compounds have not been found. He will send me the results

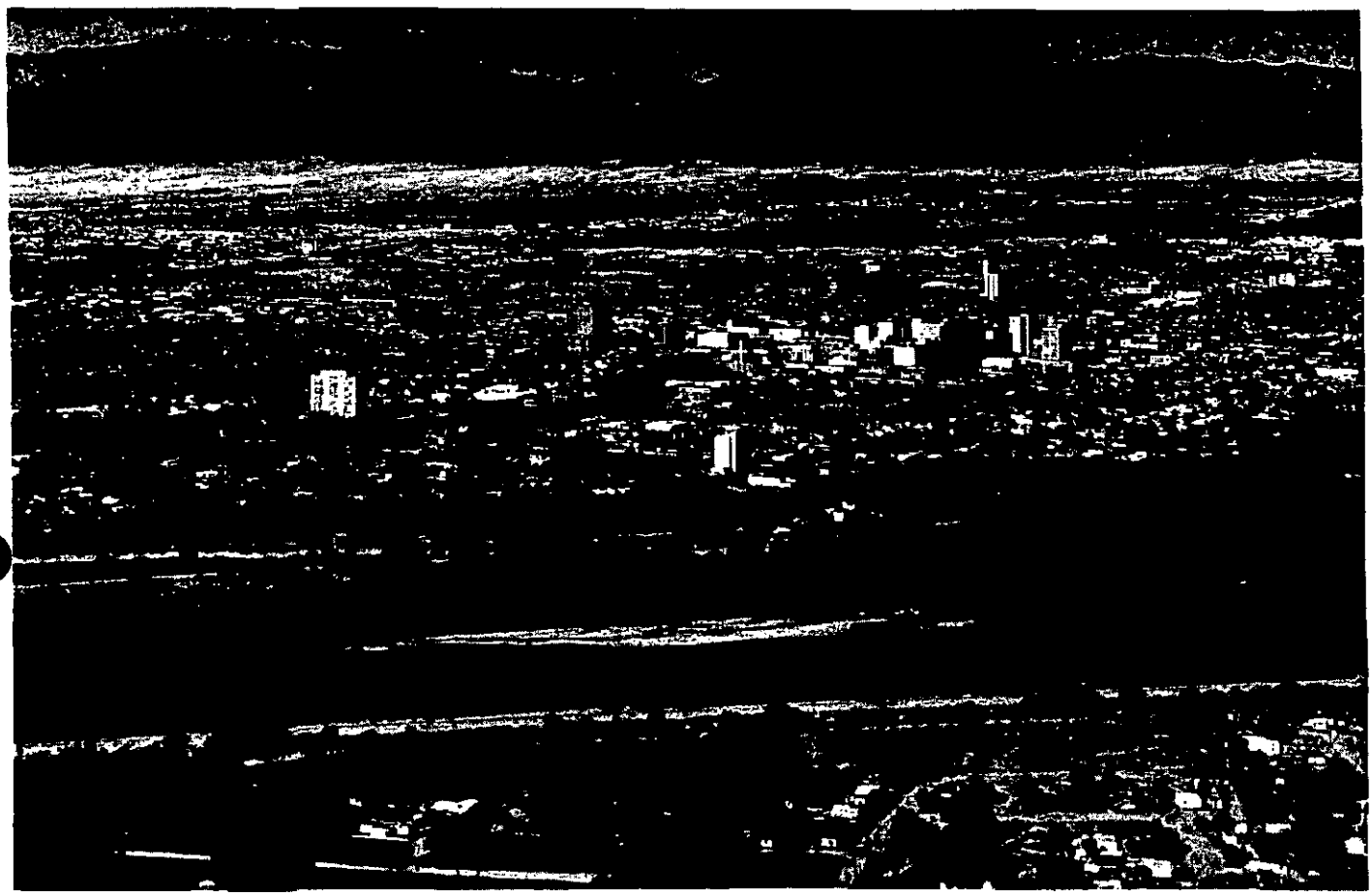
4) He said that I could sample the well if I needed to

Signed

REFERENCE 13

SOIL SURVEY OF

Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico



United States Department of Agriculture
Soil Conservation Service and Forest Service
and
United States Department of the Interior
Bureau of Indian Affairs and Bureau of Land Management
in cooperation with
New Mexico Agricultural Experiment Station

noderately alkaline; abrupt,

) (7.5YR 6/4) heavy silt loam, *moist; weak, coarse, blocky* d, friable, sticky and plastic; ir pores; slightly calcareous;

5YR or 10YR, value of 4 or 5 hroma of 2 to 4. The organic- nches averages less than 1 per- *e sandy loam, loam, fine sandy* zon has hue of 7.5YR to 10YR, oist, and chroma of 3 or 4. It is lay loam, or light clay. The C *0YR, value of 5 or 6 dry and* 6 dry and moist.

m, 0 to 2 percent slopes. *in the northeastern part of* vation. It has a profile esentative of the series, but *ture and is about 6 inches*

apping are small areas of *d Silver fine sandy loam,*

azard of soil blowing is

, watershed, and wildlife ubclass VIe; native plant

, moderately alkali, 0 to 2 nearly level soil is in the *ncito Navajo Reservation.* described as representative layer differs in texture, is *exchangeable cations that* m. On about 10 percent of winnowed, and on about 20 *oil is exposed.*

apping are small areas of d Silver fine sandy loam. azard of soil blowing is

, watershed, and wildlife ubclass VIs; native plant

2 to 5 percent slopes. This lver very fine sandy loam sandy loam. It is east of ntains.

ve the profiles described as e series. Runoff is medium, is moderate.

orth of Interstate Highway inant south of Interstate he Torrance and Santa Fe a soil that has a loam sur- mulated lime higher in the and Witt soils. In a few he surface layer is gravelly

ping are areas of Manzano to 9 percent slopes; and a complex, 5 to 20 percent ke up about 15 percent of all areas of a soil that is similar to Silver and Witt soils but has a subsoil of light clay.

This *mapping unit is used for range, watershed, wildlife* habitat, and community development. Dryland capability subclass VIe; native plant community 9.

SwC—Silver and Witt soils, 5 to 9 percent slopes. This mapping unit is 55 percent Silver very fine sandy loam and 25 percent Witt very fine sandy loam. It is in areas east of the Sandia and Manzano Mountains where runoff is rapid and the hazard of water erosion is moderate or severe.

The Witt soil is dominant north of Interstate Highway 40, and the Silver soil is dominant south of Interstate Highway 40. The area north of Interstate 40 is dominated by a soil that has a loam surface layer and a layer of accumulated lime higher in the profile than that in the Silver and Witt soils. In a few areas at the higher elevations the surface layer is gravelly loam.

Included in this unit in mapping are areas of Laporte-Rock outcrop-Escabosa complex, 5 to 20 percent slopes; Manzano loam; and Silver and Witt soils, 2 to 5 percent slopes. These included soils make up about 20 percent of the unit.

This mapping unit is used for range, watershed, wildlife habitat, and community development (fig. 8). Dryland capability subclass VIe; native plant community 9.

Tesajo Series

The Tesajo series consists of deep, well drained soils that formed in alluvium derived from decomposed, coarse

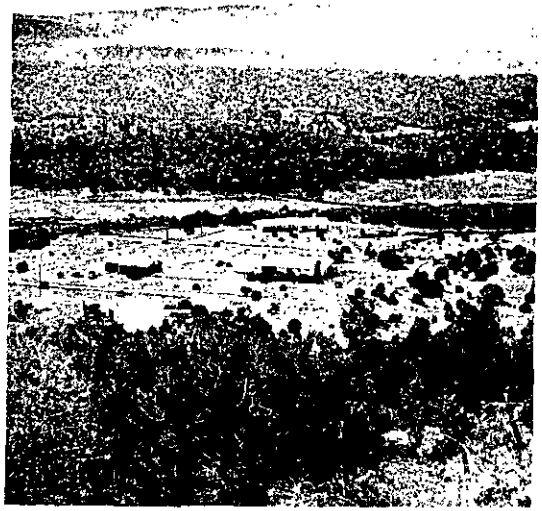


Figure 8.—Buildings on Witt very fine sandy loam. Laporte-Rock outcrop-Escabosa complex, 5 to 20 percent slopes, is in the background.

grained granitic rocks on alluvial fans. Slopes are 3 to 20 percent. The native vegetation is principally black grama, blue grama, sand dropseed, sacahuista, oneseed juniper, and small soapweed. Elevations range from 6,000 to 7,000 feet. The mean annual precipitation is 10 to 14 inches, the mean annual air temperature is 51° to 54° F, and the frost-free season is 145 to 185 days. Tesajo soils are associated with Millett, Embudo, and Tijeras soils.

In a representative profile, the surface layer is dark grayish brown stony sandy loam about 9 inches thick. Next is about 18 inches of dark grayish brown very gravelly loam. Below this to a depth of 60 inches or more is brown very gravelly loamy sand. The soil is noncalcareous and neutral or mildly alkaline.

Permeability is rapid. Available water capacity is 3 to 3.5 inches. Effective rooting depth is 60 inches or more.

Tesajo soils are used for range, wildlife habitat, watershed, recreation, and community development.

Representative profile of Tesajo stony sandy loam, from an area of Tesajo-Millett stony sandy loams, at the northeast corner of the intersection of Juniper Hill Road and Juniper Hill Place, in SW¼NE¼ sec. 14, T. 11 N., R. 4 E.

A1—0 to 9 inches, dark grayish brown (10YR 4/2) stony sandy loam, very dark brown (10YR 2/2) moist; weak, fine, granular structure; soft, very friable; many fine and very fine roots and interstitial pores; 20 percent covering of stones on surface; about 30 percent very fine granitic gravel; neutral; clear, smooth boundary.

AC—9 to 27 inches, dark grayish brown (10YR 4/2) very gravelly loam, very dark brown (10YR 2/2) moist; massive; soft, very friable; many fine and very fine roots and interstitial pores; about 35 percent very fine granitic gravel; mildly alkaline; abrupt, smooth boundary.

C1—27 to 60 inches, brown (10YR 4/3) very gravelly loamy sand, dark brown (10YR 3/3) moist; single grained; loose; common fine and very fine roots and interstitial pores; about 55 percent very fine granitic gravel; mildly alkaline.

The A horizon has value of 4 or 5 dry and 2 or 3 moist and chroma of 2 or 3. It is very gravelly loam or stony sandy loam. The C horizon has hue of 7.5YR or 10YR, value of 4 or 5 dry and 3 or 4 moist, and chroma of 2 or 3. It is very gravelly loamy sand modified by a few stones.

Te—Tesajo-Millett stony sandy loams. This undulating to hilly mapping unit (fig. 9) is about 40 percent a Tesajo stony sandy loam that has 3 to 20 percent slopes and 40 percent a Millett stony sandy loam that has 3 to 15 percent slopes.

The Millett soil is on ridges of alluvial fans. The Tesajo soil is in swales adjacent to the parallel to the intermittent streams and is subject to flooding. The Tesajo and Millett soils have the profiles described as representative of their respective series. Runoff is medium, and the hazard of water erosion is moderate.

Included in this unit in mapping are arroyo channels and Rock outcrop, which make up about 20 percent of the

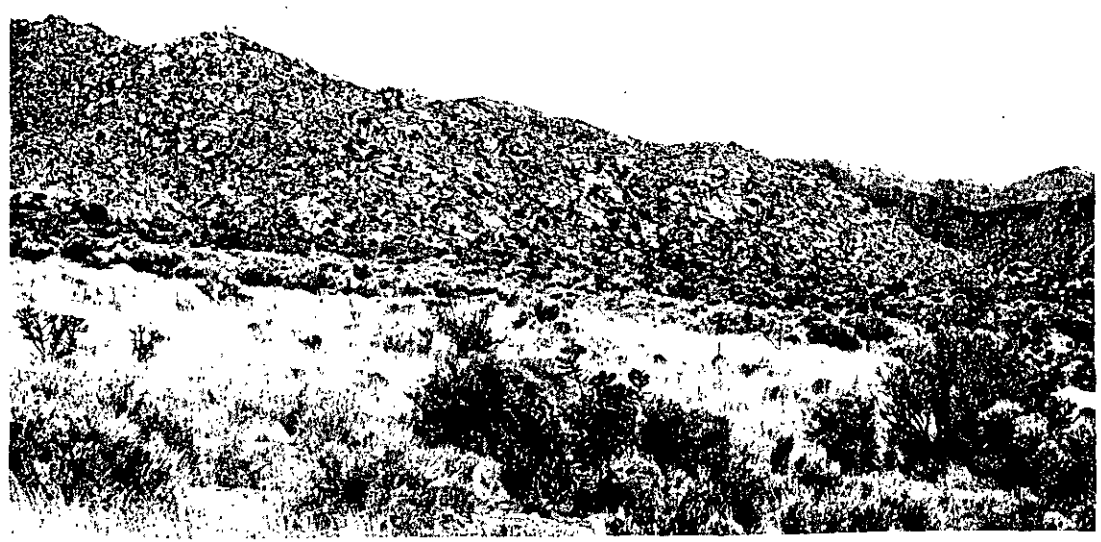


Figure 9.—An area of Tesajo-Millett stony sandy loams. In the background is Rock outcrop-Orthids complex, 40 to 80 percent slopes.

unit. About 20 percent of the surface is covered with granitic stones and boulders 1 foot to 15 feet in diameter.

This mapping unit is used for watershed, wildlife habitat, community development, and range. Dryland capability subclass VIIc; native plant community 5.

Tijeras Series

The Tijeras series consists of deep, well drained soils that formed in decomposed granitic alluvium on old alluvial fans. Slopes are 1 to 9 percent. The native vegetation is principally sand dropseed, black grama, blue grama, and some small soapweed. Elevations range from 5,000 to 6,500 feet. The mean annual precipitation is about 7 to 10 inches, the mean annual air temperature is 58° to 60° F, and the frost-free season is 170 to 195 days. Tijeras soils are associated with Embudo, Millett, Tesajo, and Wink soils.

In a representative profile (fig. 10), the surface layer is brown gravelly fine sandy loam about 4 inches thick. The subsoil is about 15 inches of brown sandy clay loam that has some accumulation of lime in the lower part. The substratum to a depth of 60 inches or more is pale brown very gravelly loamy sand and gravelly sandy loam. The gravel is derived from granite and is fine and angular. The soil is moderately alkaline.

Permeability is moderate. Available water capacity is 3.0 to 6.5 inches. Effective rooting depth is 60 inches or more.

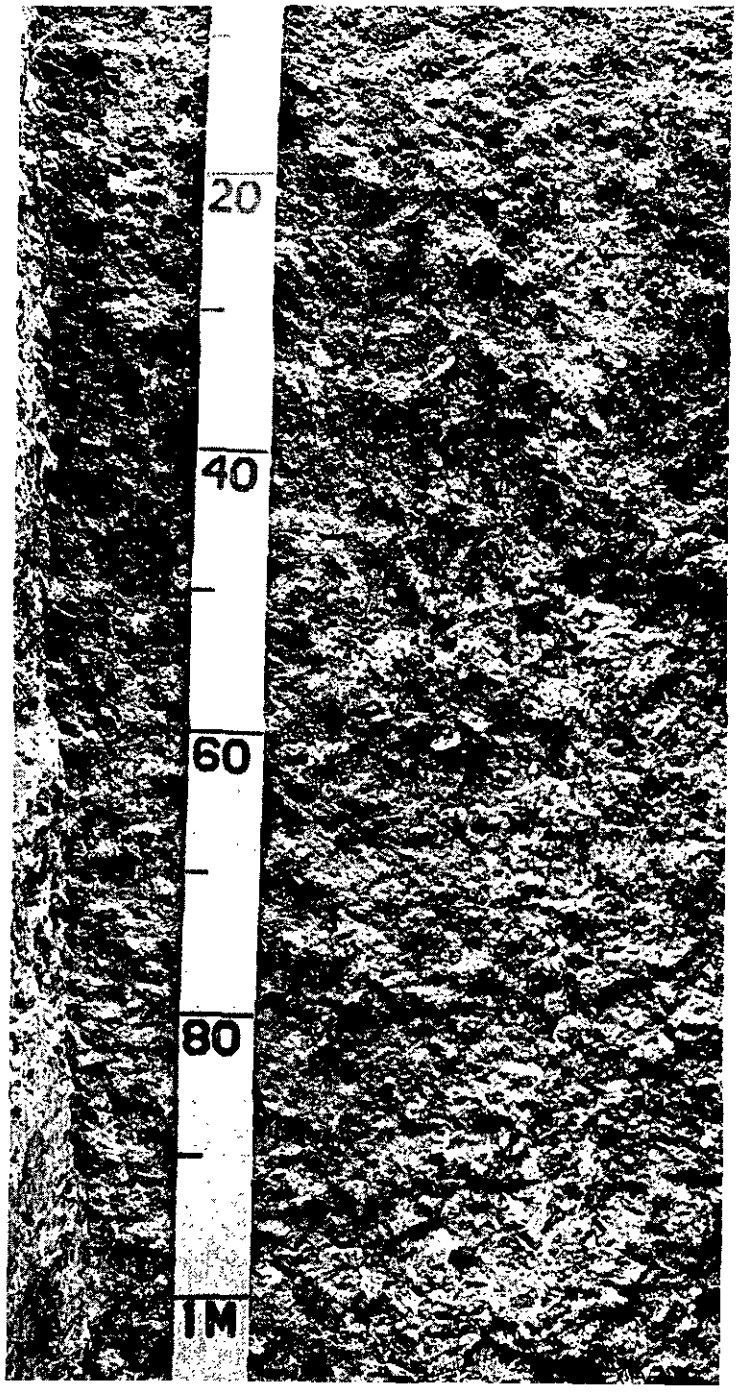
Tijeras soils are used for community development, range, watershed, and wildlife habitat.

Representative profile of Tijeras gravelly fine sandy loam, from an area of Embudo-Tijeras complex, 0 to 9 percent slopes, in SE¼SE¼ sec. 4, T. 10 N., R. 4 E.

A1—0 to 4 inches, brown (10YR 5/3) gravelly fine sandy loam, dark brown (10YR 3/3) moist; weak, thin, platy structure in upper ½ to 1 inch and weak, fine, granular structure in lower part; soft, very friable; many fine and very fine roots and interstitial pores; about 20 percent very fine granitic gravel; moderately alkaline; abrupt, smooth boundary.

B21t—4 to 9 inches, brown (7.5YR 4/4) sandy clay loam, dark brown (7.5YR 3/4) moist; moderate, medium, subangular blocky structure; slightly hard, very friable, sticky and plastic; many fine and very fine roots and tubular pores; many moderately thick clay films on peds and in tubular pores; about 5 percent very fine granitic gravel; moderately alkaline; clear, wavy boundary.

B22t—9 to 14 inches, brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; moderate, medium, subangular blocky structure; hard, friable, sticky and plastic; many fine and very fine roots and tubular pores; common moderately thick clay films on peds and many moderately thick clay films in tubular pores; about 5 percent very fine granitic gravel;



and very fi
stitial pores;
as few fine s

The A horizon has
dry and 3 to 5 moist,
hue of 5YR to 10YR,
chroma of 4 or 5. It i
heavy loam that is m
has hue of 7.5YR or
loam and very gravel

**TgB—Tijeras grave
slopes.** This nearly le
alluvial fans on the E
to that described as
has a yellowish brown
and has less gravel ar
and 30 inches.

Included with this s
Madurez, and Latene
of the unit.

Runoff is moderate
is moderate.

This soil is used fo
watershed, and wild
subclass VIIe; native

Tome Series

The Tome series c
that formed in alluvia
and shale on broad allu
The native vegetation
sacaton, blue grama, b
range from 4,800 to 5
itation is 7 to 10 inche
is 58° to 60° F, and
days. Tome soils are
soils.

In a representative
very fine sandy loam
The underlying layer
inches of pale brown si
brown heavy clay loam
clay loam, and 23 inch
loam. The soil is mode

Permeability is m
capacity is 9.5 to 10.
60 inches or more.

Tome soils are us
habitat, and communi

Representative prof
about 0.35 mile wes
sec. 25, T. 9 N., R. 3

A11—0 to 3 inches,
dark brown

TABLE 7.—*Engineering classification*

Soil series and map symbols	Depth to—		Depth from surface	USDA texture of representative profile	Classification		Coarse fraction greater than 3 inches
	Bedrock	Seasonal high water table			Unified	AASHTO	
	Feet	*Feet*	*Inches*				*Percent*
*Tesajo: Te For Millett part, see Millett series.	>5	>5	0–60	Very gravelly loam to very gravelly loamy sand.	GP-GM, GM, or SM	A-1	0–10
Tijeras: TgB	>5	>5	0–19	Gravelly fine sandy loam and sandy clay loam.	SM, CL-ML, or CL	A-4	
			19–60	Gravelly sandy loam and very gravelly loamy sand.	SM	A-1 or A-2	0–10
Tome: To	>5	>5	0–11	Silt loam	ML or CL-ML	A-4	
			11–27	Clay loam	CL-ML or CL	A-4 or A-6	
			27–60	Fine sandy clay loam.	CL-ML or CL	A-4 or A-6	
Torrifluvents: TP No valid estimates; material too variable.	>5	[1] 1–5					
*Travessilla: TQC, TR No valid estimates for Rock outcrop part of TR	0.5–1.5	>5	0–10 10	Sandy loam Bedrock.	SM	A-2 or A-4	0–25
Ustolls No valid estimates; material too variable. Mapped only with Rock outcrop.	1–5	>5					
*Vinton: Va, VbA, VBB, Vc, VF For Brazito part of VF, see Brazito series.	>5	[1] >5	0–10 10–60	Sandy loam Loamy sand	SM SM	A-2 or A-4 A-2	
*Wink: Wab, WeB, WM For Embudo part of WeB, see Embudo series; for Madurez part of WM, see Madurez series.	>5	>5	0–35 35–60	Sandy loam Sandy loam	SM SM or SM-SC	A-2 or A-4 A-2, A-4, or A-6	
Witt Mapped only with Silver soils.	>5	>5	0–60	Silty clay loam	CL or CL-ML	A-6	

[1] Protected from flooding by levees along the Rio Grande.
[2] Nonplastic.
[3] For unit Gs, available water capacity is lower and salinity is 4–8.

and estimated properties—Continued

Percentage passing sieve—				Liquid limit	Plasticity index	Permeability	Available water capacity	Reaction	Salinity	Shrink-swell potential	Risk of corrosion to—	
No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 200 (0.074 mm)								Uncoated steel	Concrete
						Inches per hour	*Inches per inch of soil*	*pH*	*Millimhos per centimeter at 25° C*			
55–80	30–55	20–40	10–25	NP	NP	6.0–20.0	0.05–0.07	6.6–7.8	0–1	Low	Low	Low.
80–100	60–90	50–80	35–65	20–30	0–10	0.6–2.0	0.10–0.16	7.9–8.4	0–1	Low to moderate.	High	Low.
70–90	45–70	25–60	15–35	NP	NP	2.0–20.0	0.03–0.09	7.9–8.4	0–1	Low	High	Low.
	100	90–100	50–65	20–30	0–5	0.2–0.6	0.18–0.20	8.5–9.0	0–1	Low	High	Low.
	100	90–100	85–95	25–35	5–15	0.2–0.6	0.18–0.20	7.9–8.4	0–1	Moderate	High	Low.
	100	85–100	75–85	20–30	5–15	0.6–2.0	0.14–0.16	7.9–8.4	0–1	Moderate	High	Low.
75–100	65–95	40–80	20–50	NP	NP	2.0–6.0	0.08–0.13	7.9–8.4	0–1	Low	Low	Low.
	100	60–70	30–40	NP	NP	2.0–6.0	0.10–0.12	7.9–8.4	1–4	Low	High	Low.
	100	60–80	15–35	NP	NP	2.0–6.0	0.06–0.08	7.9–8.4	1–4	Low	High	Low.
	100	80–95	30–40	NP	NP	2.0–6.0	0.09–0.13	7.9–8.4	1–4	Low	High	Low.
	100	80–90	30–50	30–40	5–15	2.0–6.0	0.09–0.13	7.9–8.4	1–4	Low	High	Low.
	100	95–100	75–90	30–40	10–15	0.2–0.6	0.18–0.20	7.4–8.4	0–1	Moderate	High	Low.

[4] Subject to rare flooding.
[5] For unit SnA, reaction is 8.5–9.0 and salinity is 1–4.
[6] Subject to frequent flooding.

597-812—77——6

REFERENCE 14

THE CLIMATE OF NEW MEXICO - Revised Edition

by

Yi-Fu Tuan, Cyril E. Everard,

Jerold G. Widdison and Iven Bennett

Graphics: Judith Bateman

Bruce King, Governor

David W. King, State Planning Officer

The preparation of this report was financially aided through a federal grant from the Department of Housing and Urban Development under the Urban Planning Assistance Program authorized by Section 701 of the Housing Act of 1954 as amended.

State Planning Office, Santa Fe, 87501

1973

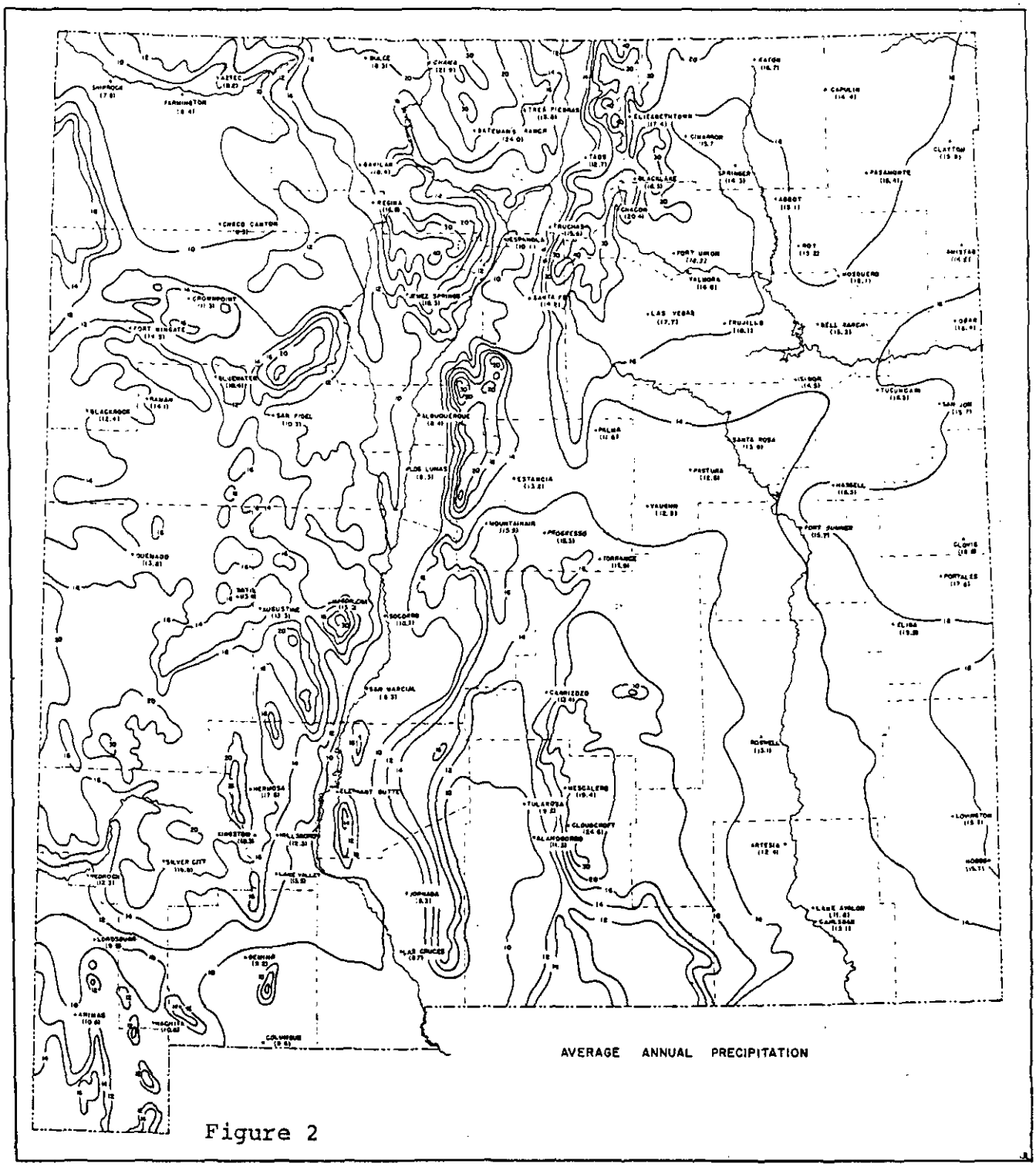
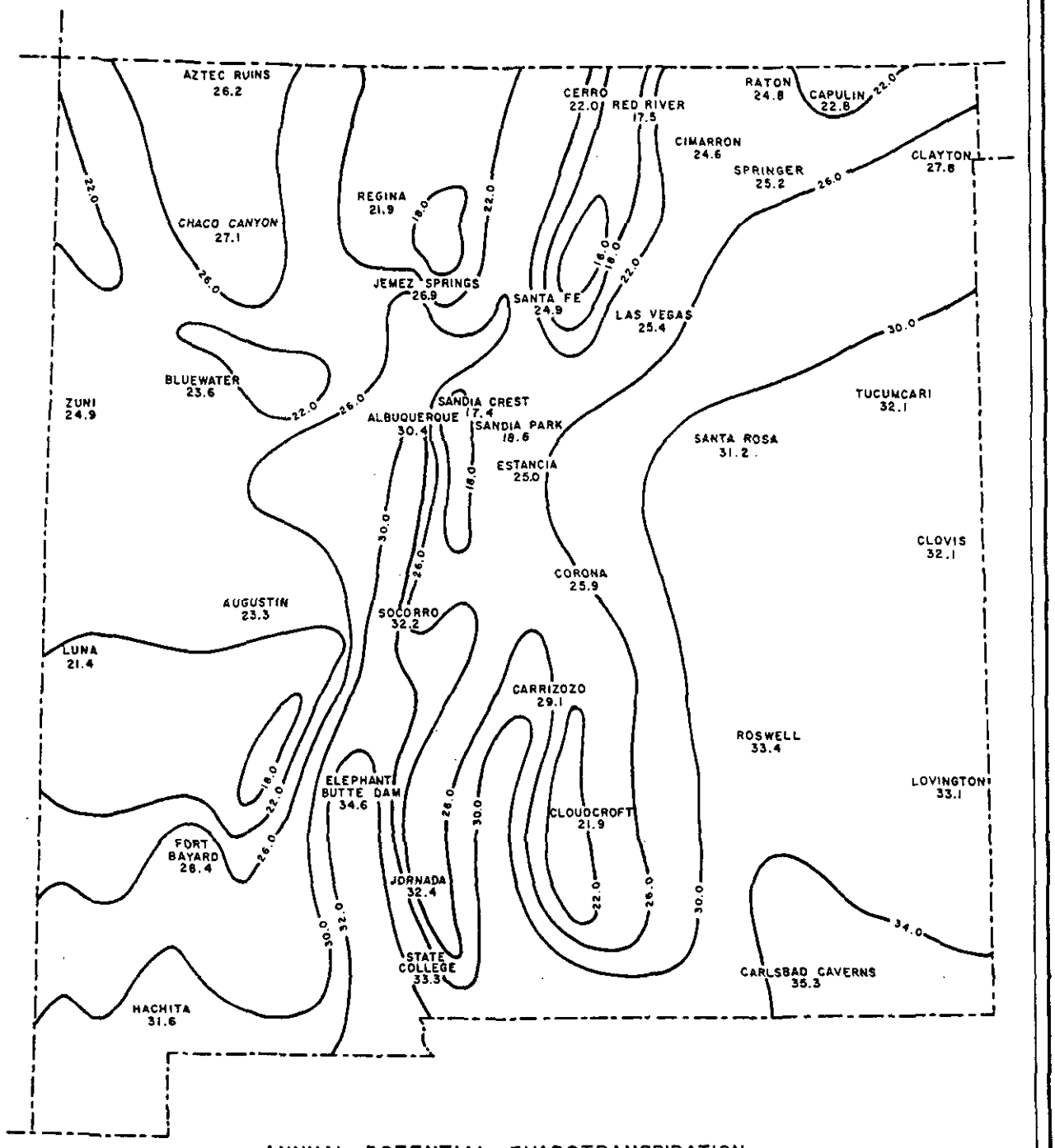


Figure 2

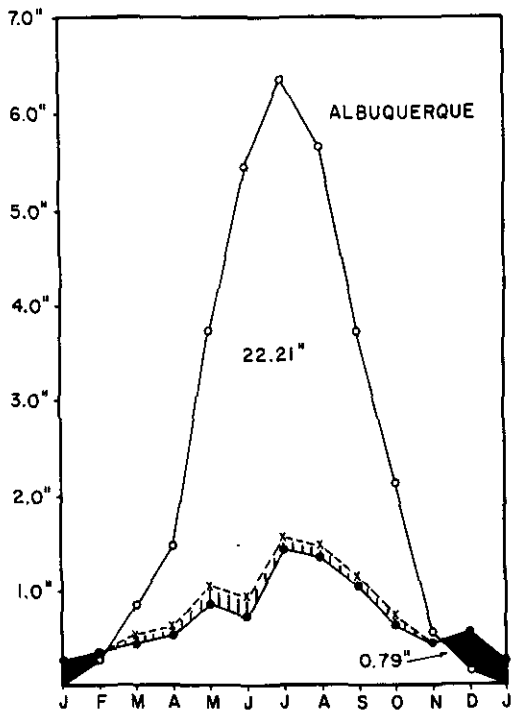


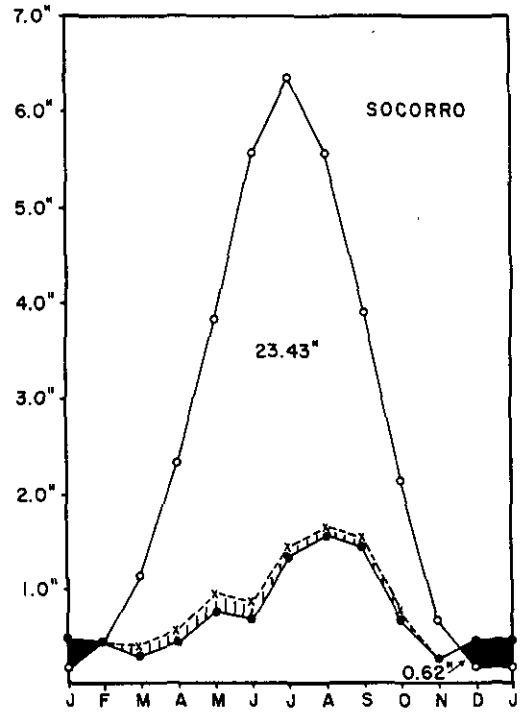
ANNUAL POTENTIAL EVAPOTRANSPIRATION

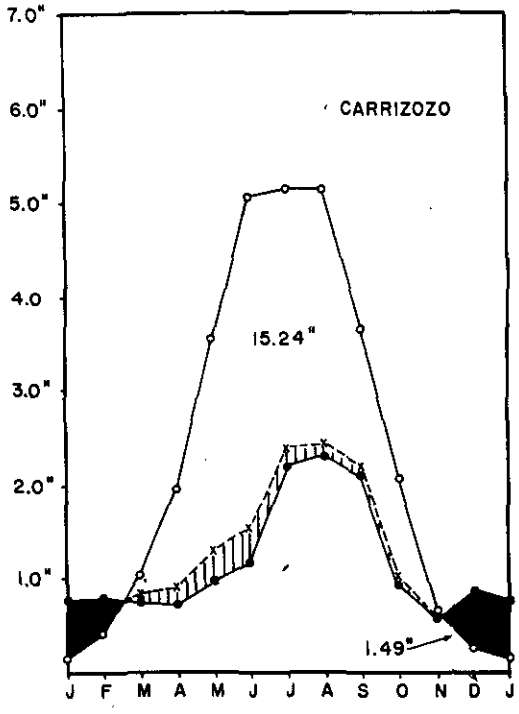
(1931 - 1955)

THORNTHWAITE FORMULA

igure 48





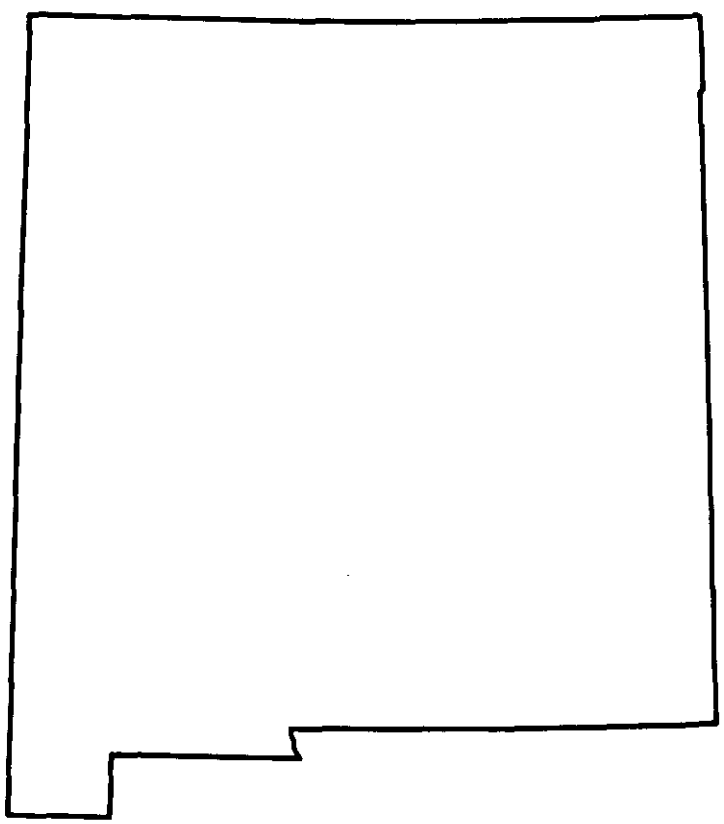


P-E GRAPHS: CENTRAL VALLEY

Figure 54

Water Resources Data New Mexico Water Year 1988

by John P. Borland and Linda V. Beal

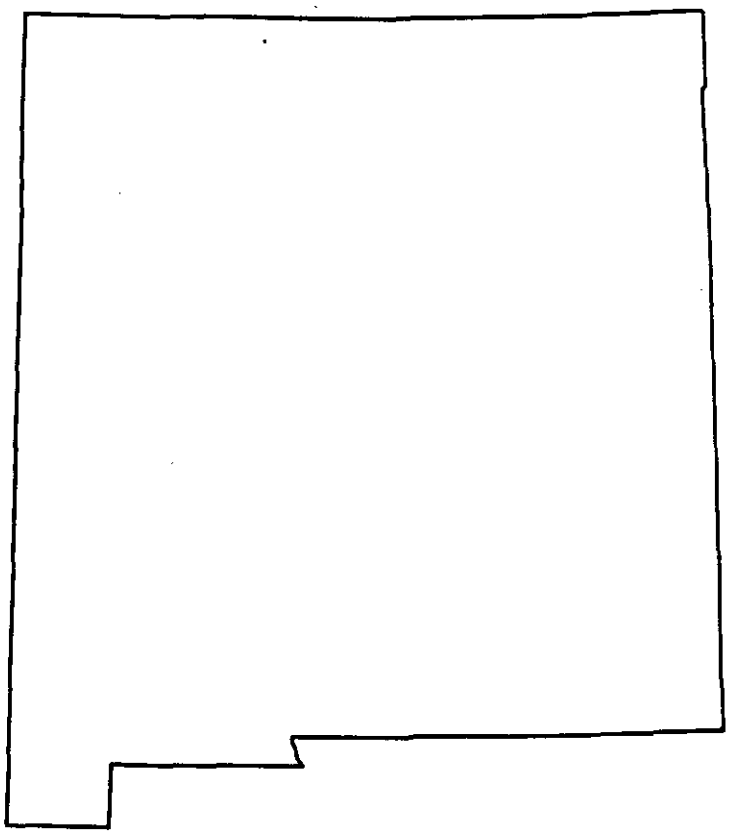


U.S. GEOLOGICAL SURVEY WATER-DATA REPORT NM-88-1
Prepared in cooperation with the State of New Mexico
and with other agencies

Annual maximum discharge at crest-stage partial-record stations

Station No.	Station Name	Location	Drainage area (mi²)	Period of record	Annual Maximum Date	Annual Maximum Gage height (ft)	Annual Maximum Discharge (ft³/s)
		RIO GRANDE BASIN - Continued					
08330500	Tijeras Arroyo at Albuquerque.	Lat 35°03'40", long 106°28'40", Bernalillo County, Hydrologic Unit 13020203, 300 ft south of old U.S. Highway 66, and 0.4 mi southeast of city limits of Albuquerque.	75.3	1943-48* 1958-	07-09-88	3.31	1,830
08331100	Belen Highline Canal tributary near Los Lunas.	Lat 34°49'20", long 106°49'10", Valencia County, Hydrologic Unit 13020203, upstream from culvert on Highway 6, 5.0 mi west of Los Lunas.	0.16	1952-53 1955-	09-14-88	4.51	156
08331650	Canada Montoso near Scholle.	Lat 34°23'11", long 106°28'37", Socorro County, Hydrologic Unit 13020203, 130 ft upstream from dip on abandoned highway, 500 ft upstream from bridge on U.S. Highway 60, and 3.6 mi southwest of Scholle.	a35	1961-	06-11-88	2.04	295
08341370	Pine Canyon near Thoreau.	Lat 35°18'34", long 108°10'14", McKinley County, Hydrologic Unit 13020207, about 1 mi southwest of the north end of Bluewater Lake, and about 7 mi southeast of Thoreau.	6.09	1969-	08-01-88	2.24	46
08348500	Encinal Creek near Casa Blanca.	Lat 35°08'35", long 107°27'55", Valencia County, Hydrologic Unit 13020207, 1.8 mi north of village of Encinal, and 6.8 mi north of Casa Blanca.	6.19	1937-39* 1959-	08-05-88	5.86	1,650
08353500	La Jencia Creek near Magdalena.	Lat 34°09'45", long 107°12'35", Socorro County, Hydrologic Unit 13020209, 3.5 mi northeast of Magdalena.	195	1957-	08-27-88	8.04	3,980
08358600	Chupadera Wash tributary at Bingham.	Lat 33°51'39", long 106°22'06", Socorro County, Hydrologic Unit 13020210, 75 ft upstream from culvert on U.S. Highway 380, and 0.1 mi west of Bingham.	1.29	1961-	06-11-88	2.25	195
08359300	San Jose Arroyo near Monticello.	Lat 33°28'05", long 107°14'30", Sierra County, Hydrologic Unit 13020211, at head of box canyon just downstream from major tributary, 800 ft downstream from culvert on old U.S. Highway 85, and 13 mi northeast of Monticello.	26.9	1959-	08-28-88	6.09	(+)
08360000	Alamosa Creek near Monticello.	Lat 33°34'09", long 107°35'33", Socorro County, Hydrologic Unit 13020211, on left bank at Alamosa damsite and downstream from Old Fort Ojo Caliente, just downstream from Wildhorse Creek, 15 mi northwest of Monticello.	403	1931-42* 1956-58 1958-69* 1973-	06-10-88	5.62	1,550
08361650	Percha Creek near Kingston.	Lat 32°55'05", long 107°38'55", Sierra County, Hydrologic Unit 13030101, at bridge on State Highway 90, 3.3 mi east of Kingston.	21.5	1953-	07-07-88	3.27	350
08361700	Percha Creek near Hillsboro.	Lat 32°54'55", long 107°36'05", Sierra County, Hydrologic Unit 13030101, 150 ft south of State Highway 90, and 2 mi west of Hillsboro.	35.4	1957-78 1980-	07-07-88	3.33	540
08363100	Rio Grande tributary near Radium Springs.	Lat 32°30'05", long 106°57'05", Dona Ana County, Hydrologic Unit 13030102, upstream from culvert on U.S. Highway 85, 120 ft upstream from mouth, and 1.4 mi west of Radium Springs.	0.40	1955-	08-16-88	5.31	133

Water Resources Data New Mexico Water Year 1989



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT NM-89-1

Prepared in cooperation with the State of New Mexico and with other agencies

Annual Maximum Discharge at Crest-Stage Partial-Record Stations

Station number	Station name	Location	Drainage area (mi²)	Period of record	Annual maximum: Date	Annual maximum: Gage height (ft)	Annual maximum: Discharge (ft³/s)
		RIO GRANDE BASIN - Continued					
08330500	Tijeras Arroyo at Albuquerque.	Lat 35°03'40", long 106°28'40", Bernalillo County, Hydrologic Unit 13020203, 300 ft south of old U.S. Highway 66, and 0.4 mi southeast of city limits of Albuquerque.	75.3	1943-48* 1958-	07-25-89	<1.83	b<250
08331100	Belen Highline Canal tributary near Los Lunas.	Lat 34°49'20", long 106°49'10", Valencia County, Hydrologic Unit 13020203, upstream from culvert on Highway 6, 5.0 mi west of Los Lunas.	0.16	1952-53 1955-	07-13-89	<4.09	b<135
08331650	Canada Montoso near Scholle.	Lat 34°23'11", long 106°28'37", Socorro County, Hydrologic Unit 13020203, 130 ft upstream from dip on abandoned highway, 500 ft upstream from bridge on U.S. Highway 60, and 3.6 mi southwest of Scholle.	a35	1961-	07-11-89	1.08	(+)
08341370	Pine Canyon near Thoreau.	Lat 35°18'34", long 108°10'14", McKinley County, Hydrologic Unit 13020207, about 1 mi southwest of the north end of Bluewater Lake, and about 7 mi southeast of Thoreau.	6.09	1969-	02-06-89	2.66	86
08348500	Encinal Creek near Casa Blanca.	Lat 35°08'35", long 107°27'55", Valencia County, Hydrologic Unit 13020207, 1.8 mi north of village of Encinal, and 6.8 mi north of Casa Blanca.	6.19	1937-39* 1959-	08-05-88 01-27-89	5.86 2.64	h690 110
08353500	La Jencia Creek near Magdalena.	Lat 34°09'45", long 107°12'35", Socorro County, Hydrologic Unit 13020209, 3.5 mi northeast of Magdalena.	195	1957-	07-22-89	4.18	2,200
08358600	Chupadera Wash tributary at Bingham.	Lat 33°51'39", long 106°22'06", Socorro County, Hydrologic Unit 13020210, 75 ft upstream from culvert on U.S. Highway 380, and 0.1 mi west of Bingham.	1.29	1961-	07-23-89	1.20	(+)
08359300	San Jose Arroyo near Monticello.	Lat 33°28'05", long 107°14'30", Sierra County, Hydrologic Unit 13020211, at head of box canyon just downstream from major tributary, 800 ft downstream from culvert on old U.S. Highway 85, and 13 mi northeast of Monticello.	26.9	1959-	- -89	---	(k)
08360000	Alamosa Creek near Monticello.	Lat 33°34'09", long 107°35'33", Socorro County, Hydrologic Unit 13020211, on left bank at Alamosa damsite and downstream from Old Fort Ojo Caliente, just downstream from Wildhorse Creek, 15 mi northwest of Monticello.	403	1931-42* 1956-58 1958-69* 1973-	08-30-89	3.40	270
08361650	Percha Creek near Kingston.	Lat 32°55'05", long 107°38'55", Sierra County, Hydrologic Unit 13030101, at bridge on State Highway 152, 3.3 mi east of Kingston.	21.5	1953-	07-07-88 07-19-89	3.27 3.32	h340 350
08361700	Percha Creek near Hillsboro.	Lat 32°54'55", long 107°36'05", Sierra County, Hydrologic Unit 13030101, 150 ft south of State Highway 152, and 2 mi west of Hillsboro.	35.4	1957-78 1980-	07-19-89	3.44	630
08363100	Rio Grande tributary near Radium Springs.	Lat 32°30'05", long 106°57'05", Dona Ana County, Hydrologic Unit 13030102, upstream from culvert on U.S. Highway 85, 120 ft upstream from mouth, and 1.4 mi west of Radium Springs.	0.40	1955-	07-24-89	4.70	90

Annual Maximum Discharge at Crest-Stage Partial-Record Stations

[illegible]on number	Station name	Location	Drainage area (mi^2)	Period of record	Annual maximum: Date	Annual maximum: Gage height (ft)	Annual maximum: Discharge (ft^3/s)
		GILA RIVER BASIN - Continued					
09455800	Steins Creek at Steins.	Lat 32°13'47", long 109°00'01", Hidalgo County, Hydrologic Unit 15040006, at culvert on Interstate Highway 10, 0.9 mi west of Steins.	1.26	1959-	07-25-89	3.28	165

< Less than.
+ Discharge not yet determined.
* Operated as continuous-record gaging station.
a Approximately.
b Peak too low to register on gage.
c Estimated.
d From floodmark.
e Gage height not determined.
f Contributing area.
g Discontinued at end of year.
h Revised.
j May not have been peak for year.
k No evidence of any flow during water year.
m No record.
n Correction.

REFERENCE 16

WATER SYSTEM PUMPING FACILITY DATA

Note: to calculate populations use 475 gal per person/day PMP

Rev-1/11/90

NAME	PUMP NO.	PUMP TYPE	TOTAL DYNAMIC HEAD	DESIGN GPM	ACTUAL GPM	COMMENTS
ATRISCO Wells	1(5)	Turb.	170	3150	2600	
	2(1)	Turb.	125	1050	950	
	3(9)	Turb.	136	1600	2000	
	4(13)	Turb.	200	1500	1500	
BURTON Wells	1	Turb.	535	3140	2900	
	2	Turb.	525	2350	2350	
	3	Turb.	522	2840	2350	
	4	Turb.	641	2295	2750	
	5			3000		In service May 1991-location Whittier Elemantry School(Katherine St)
CHARLES WELLS Wells	1	Turb.	495	3750	3400	
	2	Turb.	504	3460	3100	
	3	Turb.	486	3500	3000	
	4	Turb.	615	3950	3750	
	5	Turb.		3000		In service August 1990
COLLEGE Wells	1	Turb.	574	1600	1600	
	2	Turb.	563	2100	1925	
CORONADO Wells	1	Turb.	480	2500	2500	
	2					In service May 1991-location San Pedro and Pino(Pino Yards)
DON Wells	1	Turb.	490	1200	1000	Out of Service
DURANES Wells	1	Turb.	164	2245	2200	
	2	Turb.	185	2000	2500	
	3	Turb.	190	2700	2600	
	4	Turb.	247	2400	2100	
	5	Turb.	358	2000	1875	
	6	Turb.	165	2000	1700	
	7	Turb.	275	2120	2250	
GONZALES Wells	1			2200		In service May 1992
	2			2400		In service August 1990, at Vista Grande Dr & Ian NW

JUN 07 '90 10:38 PM

Rev-1/11/90

NAME	PUMP NO.	PUMP TYPE	TOTAL DYNAMIC HEAD	DESIGN GPM	ACTUAL GPM	COMMENTS
GRIEGOS	1	Turb.	130	2460		
Wells	2	Turb.	86	1930		
	3	Turb.	162	1900		
	4	Turb.	100	2000		
	5	OUT OF SERVICE				
LEAVITT	1	Turb.	275	1700	1750	
Wells	2	Turb.	290	1200	950	
	3	Turb.	361	2560	2550	
LEYENDECKER	1	Turb.	474	2700	2680	
Wells	2	Turb.	425	2450	2100	
	3	Turb.	425	2400	1900	
	4	Turb.	491	2400	2200	
LOMAS	1	Turb.	870	1500	1250	
Wells	2	Turb.	1061	500	475	
	3	Turb.	1120	500	314	
	4	Turb.	1092	700	550	
	5	Turb.	979	2400	2400	
	6	Turb.	976	2680	2150	
LOVE/EUBANK	1	Turb.	700	1200	1150	
Wells	2	Turb.	620	1200	Parks	
	3	Turb.	678	1700	1500	
	4	Turb.	705	1700	1600	
	5	Turb.	820	1600	1600	
	6	Turb.	739	1050	650	
	7	Turb.	660	2200	2200	
	8	Turb.		2500		In service Aug 1990
MILES	1	Turb.	367	2800	2200	
Wells						
PONDEROSA	1	Turb.	1065	2000	1850	
Wells	2	Turb.	898	1800	1750	
	3	Turb.	870	2370	2200	
	4	Turb.	1011	1600	1650	

Rev-1/11/90

NAME	PUMP NO.	PUMP TYPE	TOTAL DYNAMIC HEAD	DESIGN GPM	ACTUL GM	COMMENTS
	5	Turb.	1016	1800	170	
	6	Turb.	892	2400	250	
RIDGECREST	1	Turb.	685	1700	160	
Wells	2	Turb.	685	3200	290	
	3	Turb.	660	3200	280	
	4	Turb.	673	3000	260	
	5			3000		In service May 1991-location Zuni and San Pablo
SANTA BARBARA	1	Turb.	270	3400	350	
Wells						
SAN JOSE	1	Turb.	150	500	50	
Wells	4(7)	Turb.	180	1500	100	
	5(8)	Turb.	180	2350	275	
	6(10)	Turb.	180	2350	Out	
THOMAS	1	Turb.	638	1800	130	
Wells	2	Turb.	651	1400	100	
	3	Turb.	638	1800	100	
	4	Turb.	634	1800	100	
	5	Turb.		2200		In service August 1990
	6	Turb.		2500		In service August 1990
	7	Turb.		2500		In service August 1990
	8			2000		In service May 1991-location Madison Jr High(Moon & Aztec)
VOL-ANDIA	1	Turb.	335	3860	300	
Wells	2	Turb.	375	3580	300	
	3	Turb.	416	3600	300	
	4	Turb.	355	3100	250	
	5	Turb.	296	3000	200	
	6	Turb.	295	3000	300	
VOLCANO CLIFFS	1	Turb.	486	2600	250	
Wells	2	Turb.	489	2100	200	
	3	Turb.		3000	750	
WALKER	1	Turb.	916	1500	525	

WATER SYSTEM PUMPING FACILITY DATA

Rev-1/11/90

NAME	PUMP NO.	PUMP TYPE	TOTAL DYNAMIC HEAD	DESIGN GPM	ACTUAL GPM	COMMENTS
Wells	2	Turb.	854	2500	2500	
W. A. WEBSTER	1	Turb.	587	2800	2600	
Wells	2	Turb.	611	3400	3250	
WEST MESA	1	Turb.	300	500	350	
Wells	2	Turb.	450	1750	1750	
	3	Turb.	422	2500	2550	
	4	Turb.	384	2500	2400	
YALE	1	Turb.	830	2750	2600	
Wells	2	Turb.	426	3225	3000	
	3	Turb.	500	2500	2350	

March 1990

PUBLIC WATER SUPPLY WELLS

Service Circuits

3 mile radius	4 mile radius
Chales Wells CH 1,2,3,4,5,8	Thomas TH 1,2,5,6,7,8
Love\Eubank LV 1,3,4,5,6,7	Leyendecker LY 1,2
Lomas LO 1,2,3,4,5,6	Santa Barbara SB 1
Ridgecrest RC 1,2,3,4	Yale YA 1,2
Burton BU 1,2,3,4	

KINGS SALES

3 mile radius	4 mile radius
Charles Wells CH 1,3,4,8	Charles Wells CH 2,5
Love\Eubank LV 1,3,4,5,6,7	Thomas TH 1,2,5,6,7,8
Lomas LO 1,2,3,4,5,6	Ponderosa PO 2,3,4
Ridgecrest RC 1,2,3,4	Burton BU 1*,2,3,4*

Gulton Industries

3 mile radius	4 mile radius
	Love\Eubank LV 1,3,4,5,6,7*
Lomas LO 1,2,3,4,5,6	Ridgecrest RC 1,2,3,4*

*** not within the 4 mile radius unless well are all connceted**

REFERENCE 17

STATE OF NEW MEXICO
HEALTH ENVIRONMENT

RECORD OF TELEPHONE CONVERSATION

Time: 3:20 pm	Date: 7/25/90
Originating Party: Susan Morris	Other Parties: Lt. Donald Hickman
NMEID/Superfund	Engineering Section/KAFB

Subject: Water Supply Wells on The Kirtland Airforce Base,

Discussion: Lt. Hickman said:

1) That not all the wells on the base are continually pumping though they may be on line.

2) During hot/dry spells they may use water from the City of Albuquerque with whom they have a contract for such situations.

3) The estimated population served by the would be approximately 20,000 to 22,000 individuals.

Susan A Morris

Signed

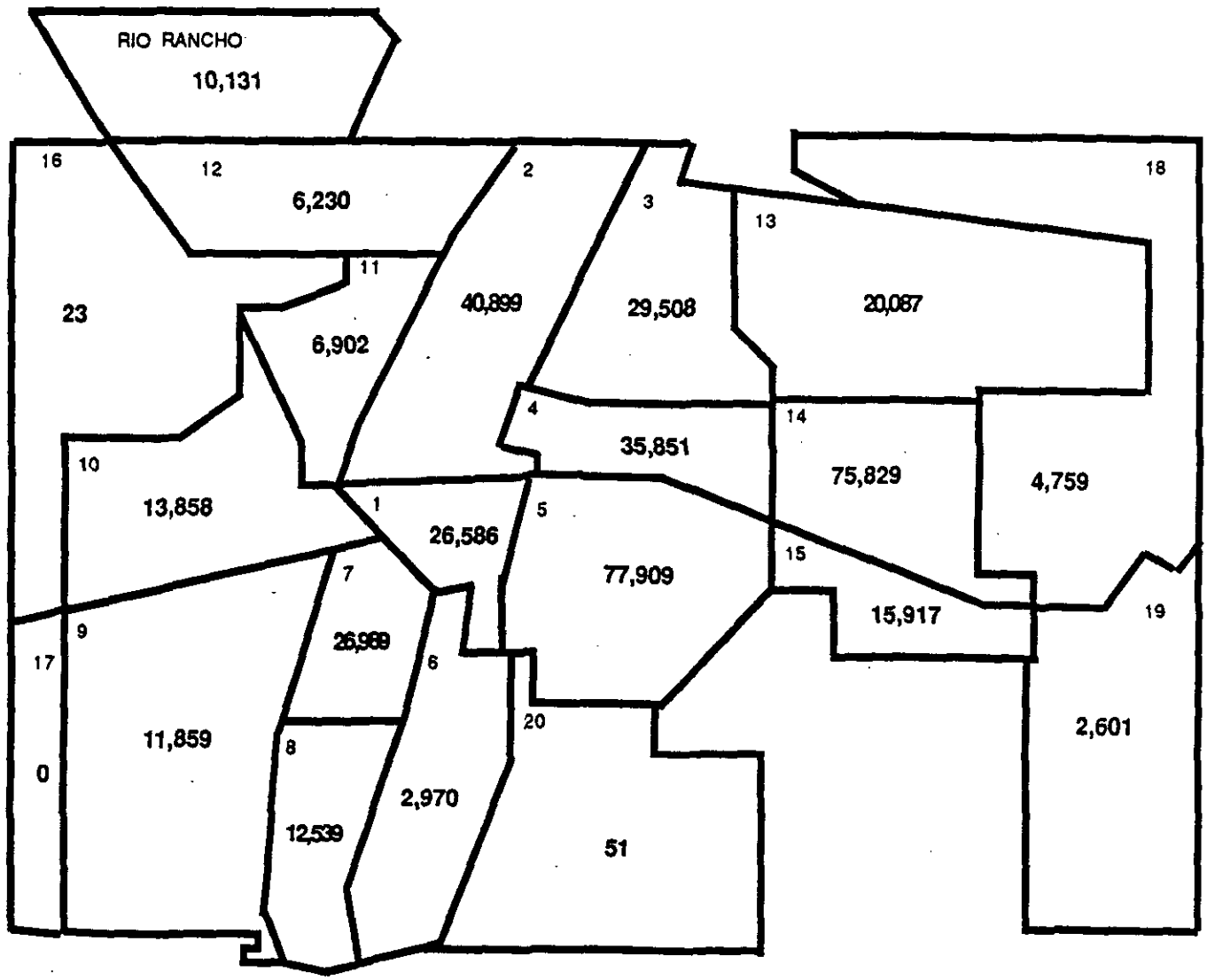
REFERENCE 18

Albuquerque Data Book
1988 Edition

City of Albuquerque
Planning Division

MAY 1988

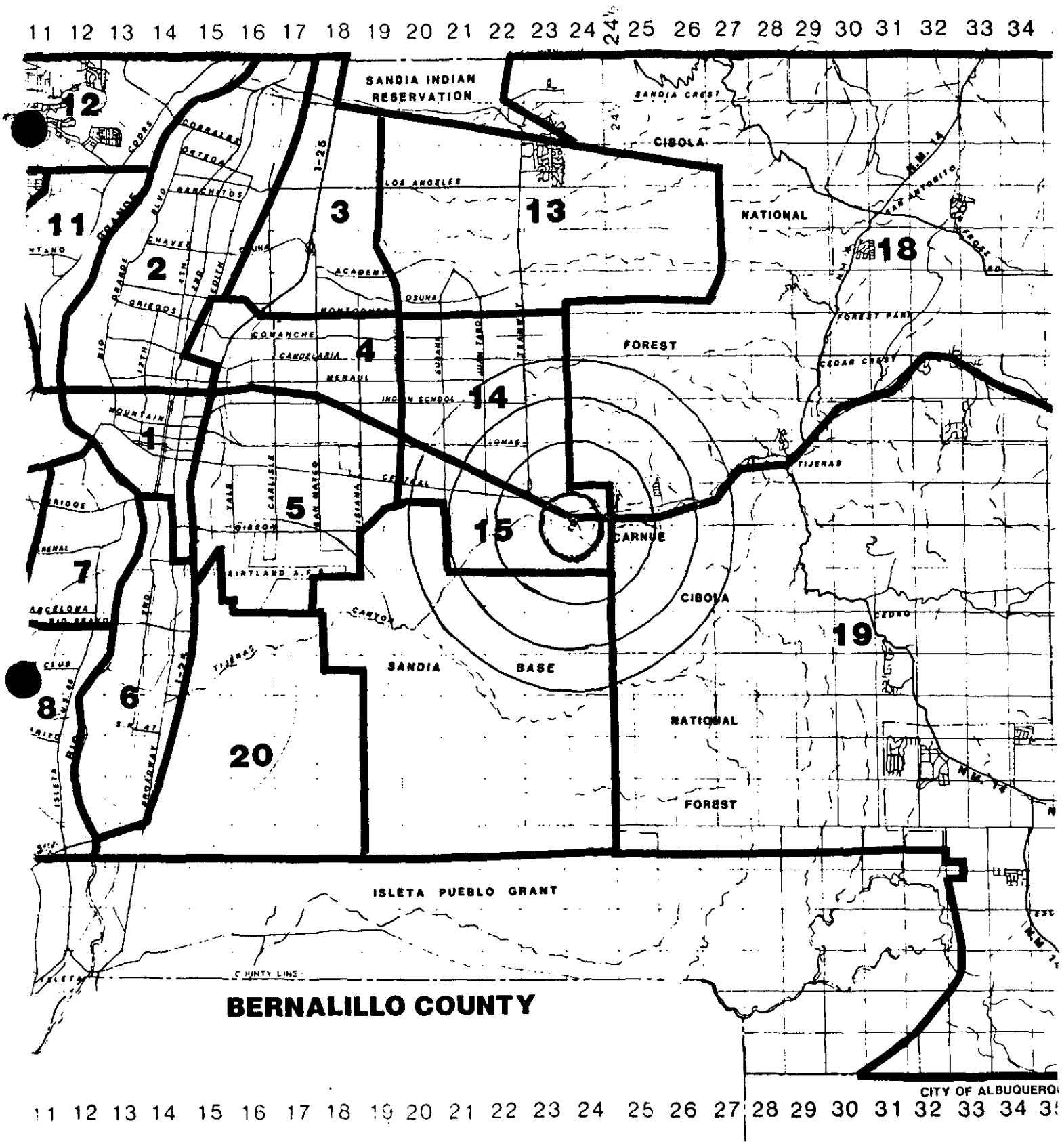
Population, 1980
Total Persons



PIA 2 includes the Incorporated Village of Los Ranchos de Albuquerque, population 2,702.
PIA 19 includes the Incorporated Village of Tijeras, population 311.

Source: U.S. Bureau of the Census

Planning Department
City of Albuquerque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SANDIA INDIAN RESERVATION
SANDIA CREST
CIBOLA
NATIONAL
FOREST
CEDAR CREST
TIJERAS
CARNUE
CIBOLA
NATIONAL
FOREST
SANDIA
BASE
ISLETA PUEBLO GRANT
BERNALILLO COUNTY
CITY OF ALBUQUERQ
1
2
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